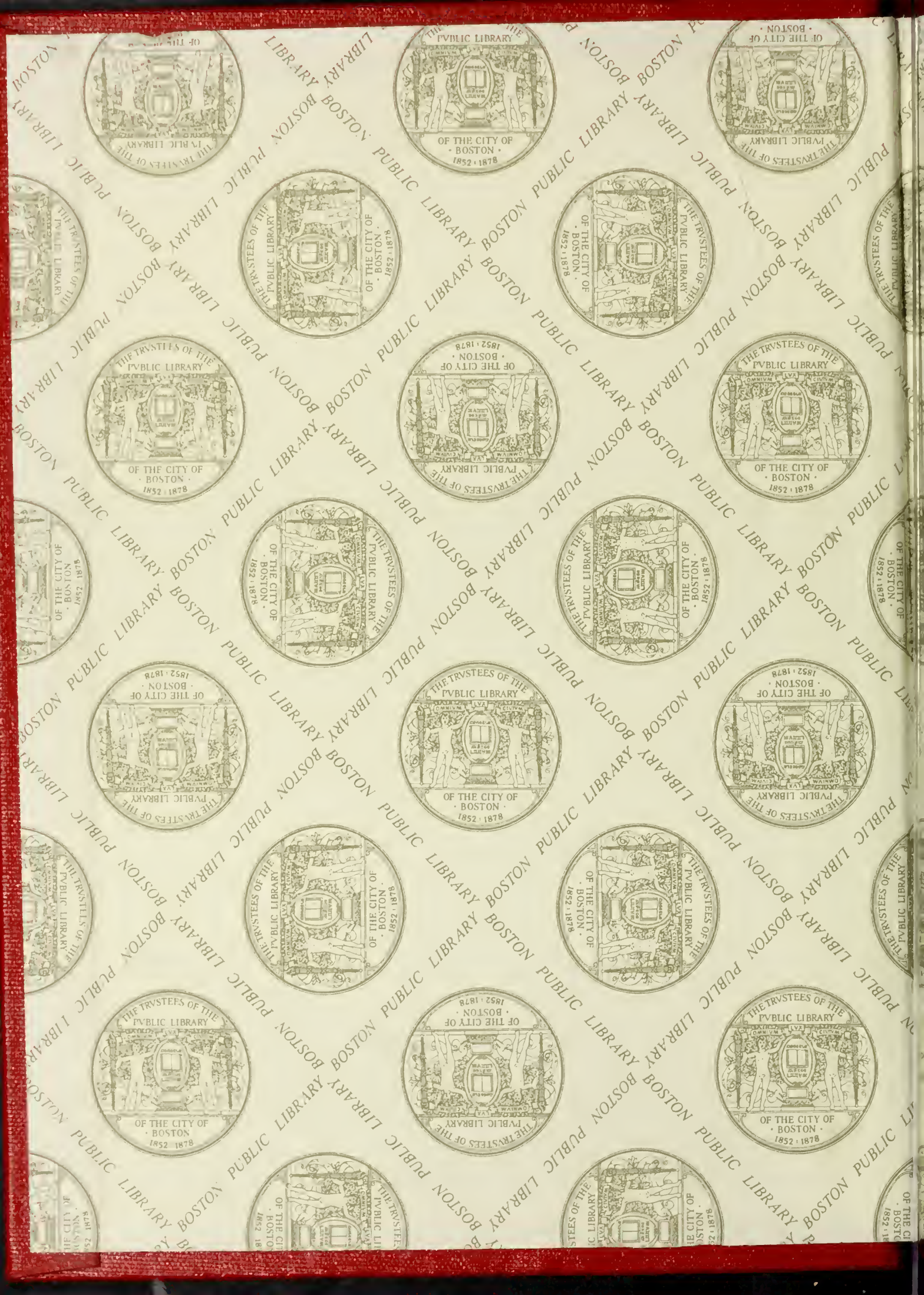
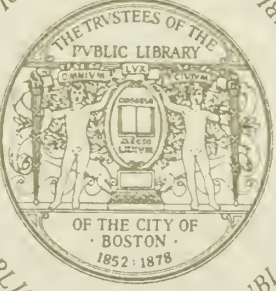
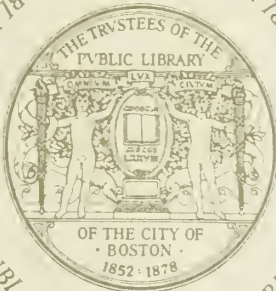
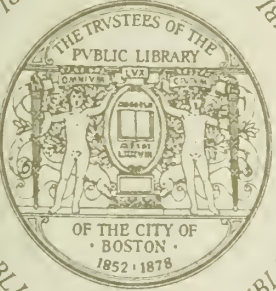
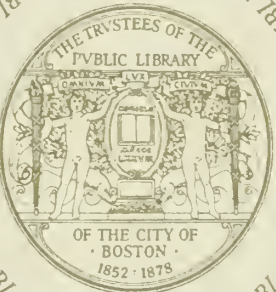
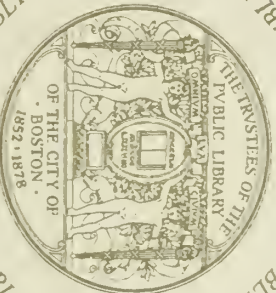


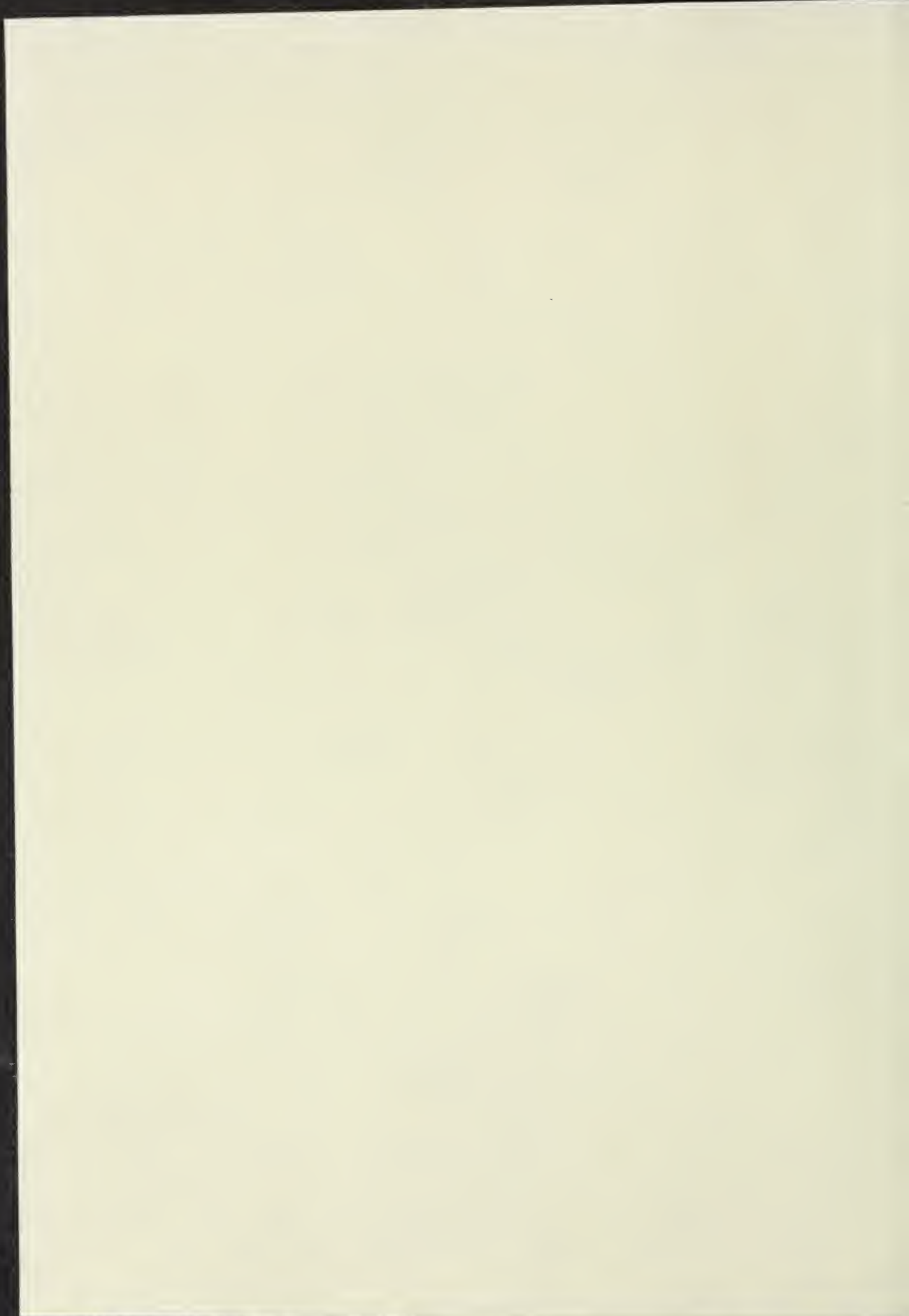
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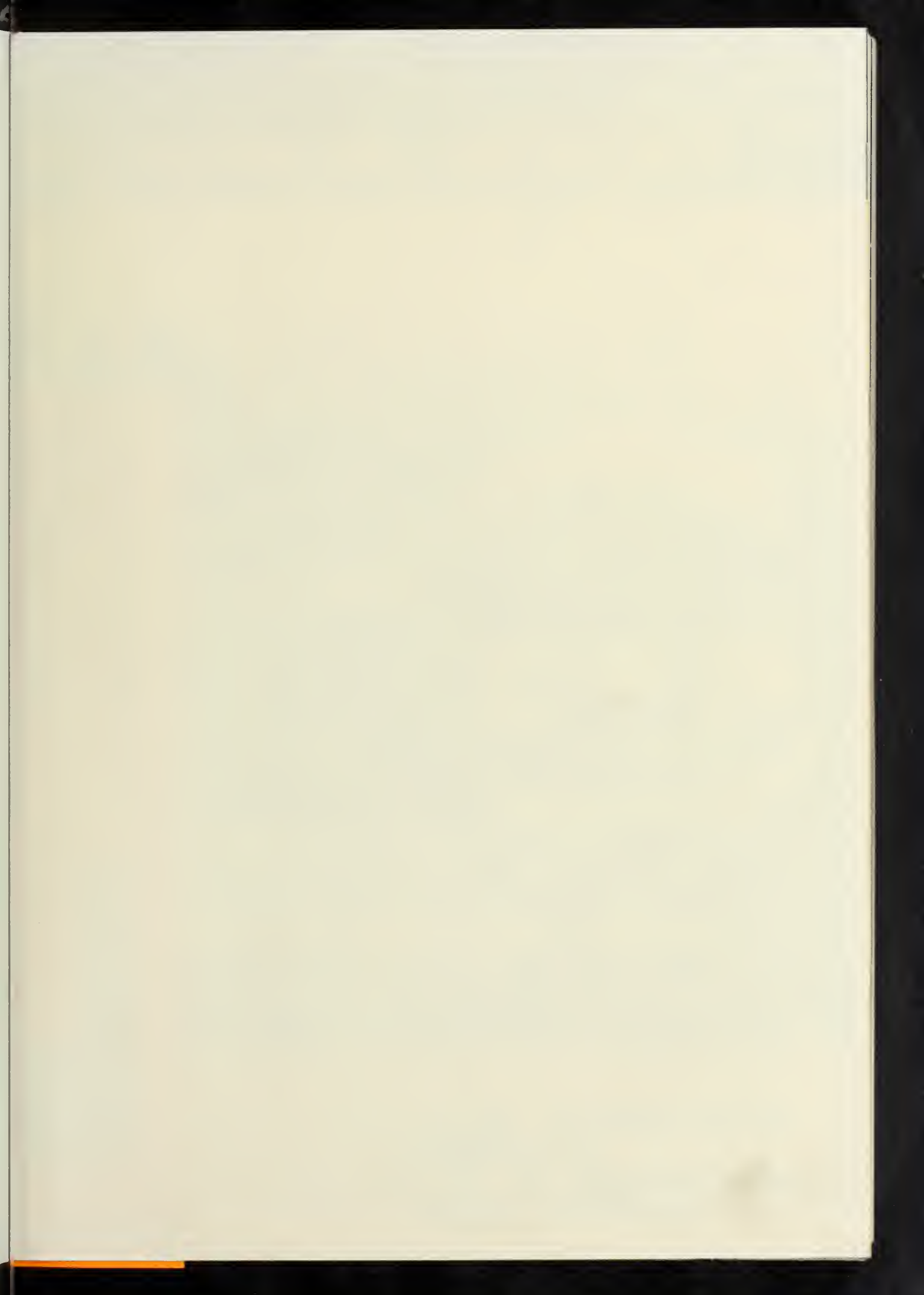


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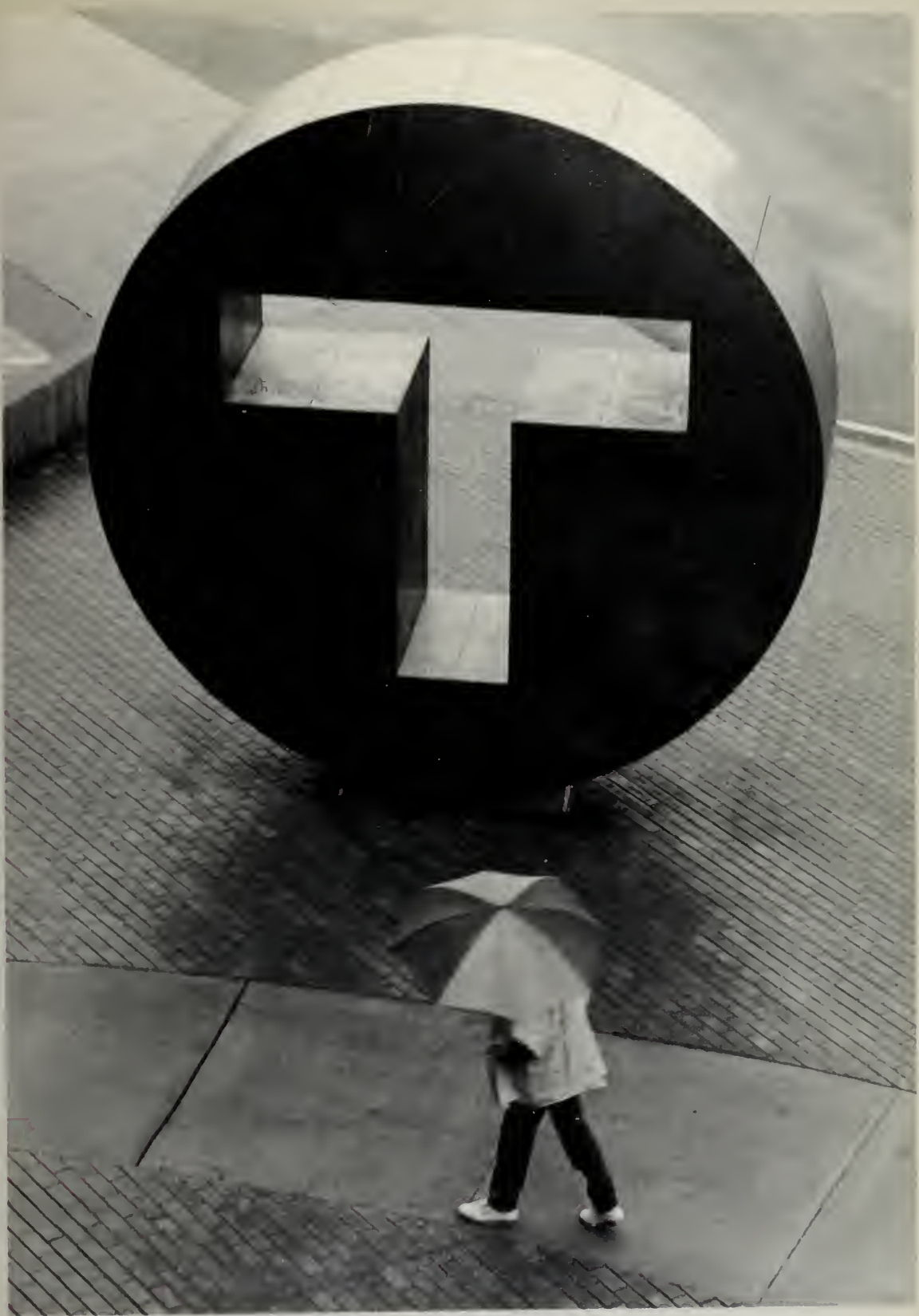




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Massachusetts Bay Transportation Authority

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Cover: This huge sculpture by Toshihiro Katayama is at Alewife Station, opened on March 30, 1985, marking the completion of the \$574 million north-west extension of the Red Line into North Cambridge and Somerville. The station, which includes a 2,000-car parking garage and 12-berth busway, serves as a major subway/bus/auto transfer point.



James F. O'Leary was appointed General Manager of the Massachusetts Bay Transportation Authority (MBTA) in 1981. He was reappointed by a unanimous vote of the Board of Directors on March 28, 1984.

Mr. O'Leary, 36, was named General Manager of the MBTA after serving two years as Undersecretary and General Counsel of the Executive Office of Transportation and Construction.

He came to EOTC after serving as Legal Counsel to U.S. Representative John J. Moakley.

A graduate of the University of Massachusetts at Boston, Mr. O'Leary earned his Juris Doctor degree from Suffolk University in 1973. He is a two-time winner of the Federal Urban Mass Transportation Administration's standing Public Service Award.

This report will examine the ways the MBTA continues to grow to serve significant increases in passenger demand. Governor Michael S. Dukakis' commitment to mass transportation, solid support by the State Legislature, the Advisory Board, and the enthusiasm, pride and professionalism of MBTA employees ensure continued progress in transforming the oldest transportation system in the nation into one of the most modern.

Projections indicate that over the course of the next decade Boston's central business district will expand exponentially in commercial development and employment. By the year 2000, the downtown area will include an additional 17 million square feet of commercial space and 150,000 new workers.

It is our goal to meet their transportation needs, and we have begun to face this challenge with innovation in 1985. We are expanding capacity, improving reliability and enhancing safety, while staying within our budget and making great strides in containing costs and increasing productivity. We look forward to playing an increasingly important role in the life of our region.



James F. O'Leary

**Letter from the
General Manager**

Extensive building projects herald a new era of improved service and increased ridership. During the last year these major programs are at or near completion:



Work on the \$740 million Orange Line Southwest Corridor project progressed on schedule and within budget, with substantial gains made on trackway and station construction.



Alewife Station and the Harvard Busway opened, completing the \$570 million Red Line Northwest Extension.



Fifty-one million dollars worth of rolling stock ordered during 1985 included 200 General Motors advanced design buses, half of which will be wheelchair equipped; 4 Red Line cars added to an original 1984 purchase of 54; and 34 new Commuter Rail coaches.



Reconstruction and expansion of South Station has to create one of the most complete intermodal transition terminals in the country.



An \$80 million program began to completely modernize and lengthen platforms in seven Red Line and three Orange Line stations.



A precedent-setting contract was signed with Carmel Union Local 589, representing 3,500 workers.

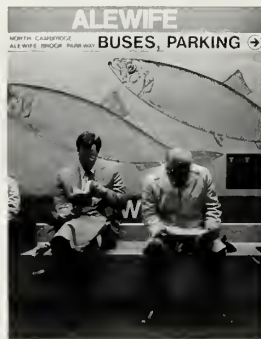


Continuation of MBTA police efforts, as part of Governor Dukakis' Anti-Crime Program, has resulted in a 33 percent reduction in crime and a 98 percent increase in arrests since 1983.



Bus and subway line ridership increased by 13 percent between 1982 and 1985—the most significant growth in MBTA ridership since World War II. This is the highest growth rate of any older subway system in the United States.

Highlights of 1985



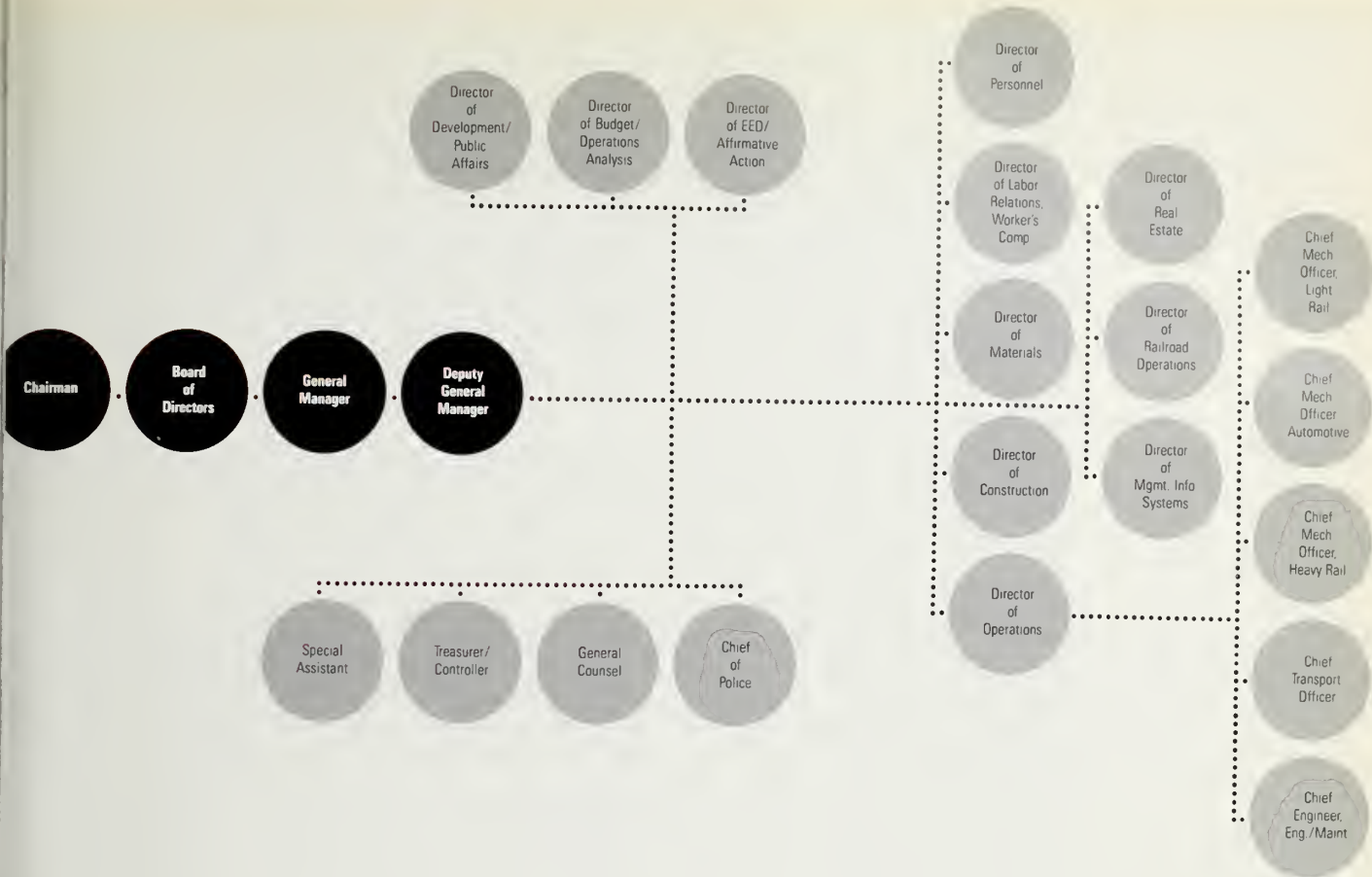
Ten miles from downtown Boston, Alewife Station, the northwestern terminus of the Red Line, was completed in 1985.



Extensive track reconstruction programs, carried out at night to minimize inconvenience to passengers, will result in a smoother, safer ride.



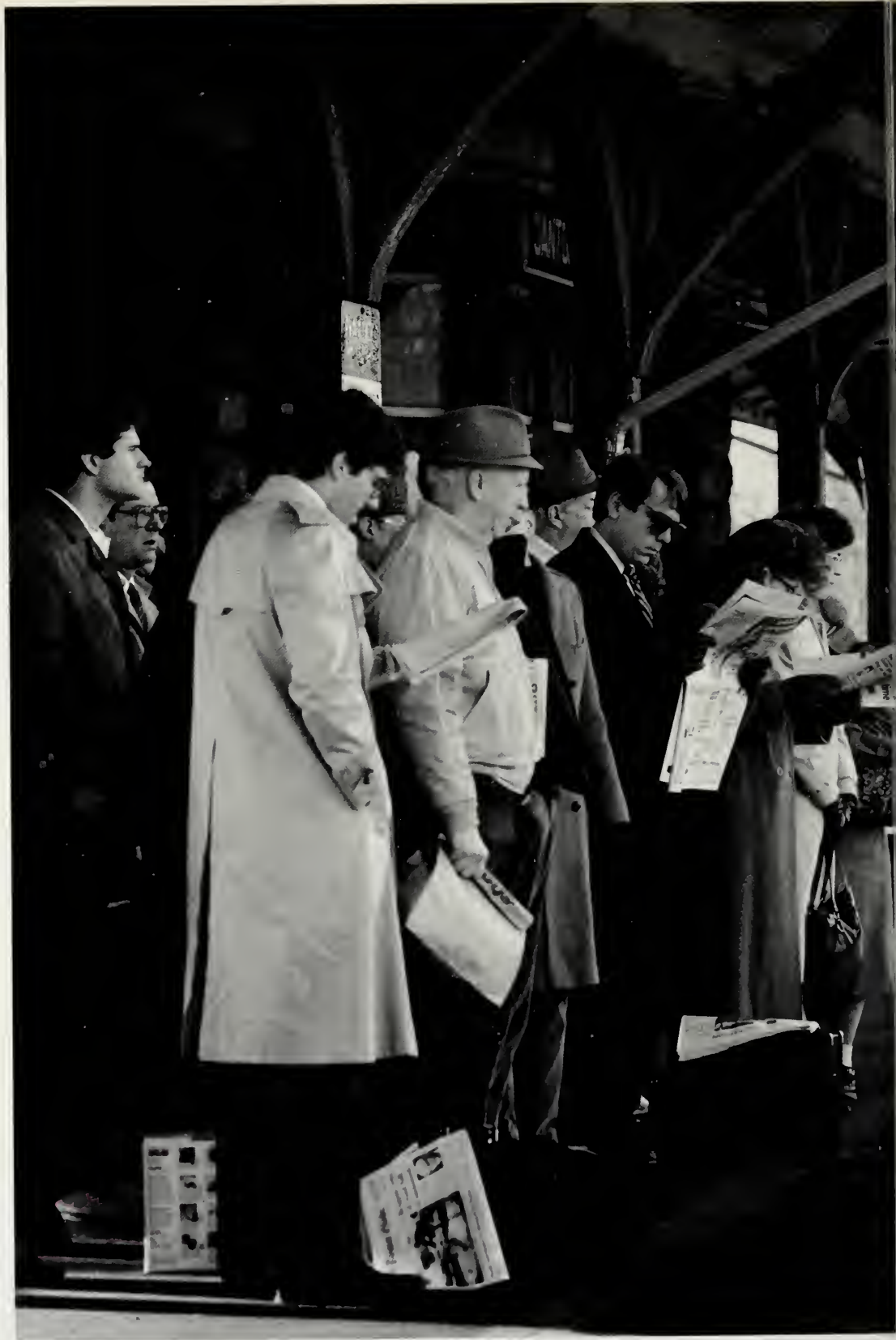
During a typical hour, 374 cars are in service on the Red, Green, Blue and Orange Lines.



cutting the ribbon at
 wife on March 30,
 5 are (l to r) Trans-
 portation Secretary
 Frederick P. Salvucci,
 House Speaker
 Thomas P. O'Neill Jr.,
 Governor Michael S.
 Deakins, MBTA Gen-
 eral Manager James
 O'Leary, Kitty
 Deakins and Ralph
 Stanley, Adminis-
 trator of the federal
 Urban Mass Trans-
 portation Adminis-
 tration.



he Fall 200 new
 advanced design
 buses were purchased
 from General Motors.



Almost 85 percent of the 26,000 daily Commuter Rail passengers travel during business rush hours. They board trains in an area that stretches from the Rhode Island border to New Hampshire, and 65 miles west of Boston.

The lifeline of the Greater Boston area runs on veins of steel and wheels of rubber, providing more than 600,000 linked trips each day and serving a region composed of 78 member towns with a population of 2,608,638 in 1,038 square miles.

Bus routes, numbering more than 150 (including local and express routes within the operating region), cover over 700 miles. These routes link with every rail line, making over 12,000 trips and carrying over 400,000 passengers each day on a fleet of over 1,000 buses.

The Ride provides door-to-door service for special needs individuals. It includes over 60 specially equipped vans that provided 220,000 trips over a 200 square mile area in 1985.

The Commuter Rail system includes 244 miles of track on eight lines, serving 85 stations. The eight lines stretch from the Rhode Island border in the south to the New Hampshire border in the north, and as far west as Gardner, 65 miles from Boston.

Daily ridership on all of the commuter rail routes totals nearly 26,000 people, equally divided between North and Southside passengers. Although trains operate throughout the day, almost 85 percent of Commuter Rail passengers travel during peak home-to-work periods.

Commonly referred to as the **T**, the oldest and fifth largest public transit system in the nation is rapidly transforming itself into one of the newest. Extensive construction, station modernization, platform extension, track reconstruction, vehicle overhaul and new equipment purchases marked 1985. Between 1983 and 1985 the MBTA invested over one billion dollars to improve its transportation facilities.

**ne oldest and fifth largest public
ansit system in the nation is rapidly
ansforming itself into one of
e newest.**

Starting at 5:00 a.m. each day, hundreds of thousands of people make their way to offices and factories, schools and universities, stores, and historic sites on MBTA buses, rapid transit trains, streetcars, trackless trolleys, commuter rail coaches, commuter boats, and specialized paratransit vans.

During a typical rush hour, 374 cars are in service on the Red, Green, Blue and Orange Lines. During the twenty-one and one-half hours between 5:00 a.m. and the end of service, these vehicles make approximately 40,000 stops at 84 stations.

MBTA statistical profile

600,000 Average weekday ridership (all systems)

556,600 Basic T system (estimated)
26,000 Commuter rail

1,786 Number of active vehicles

938 Buses
177 Streetcars (57 PCC's, 120 LRV's), total fleet
350 Rapid transit cars, total fleet
50 Trackless trolleys
211 Commuter rail (43 locomotives, 168 coaches)
60 Specially equipped vans

168 Number of stations

83 Rapid transit
85 Commuter rail

175 Number of routes

155 Bus
3 Rapid transit (Red, Orange, Blue Lines)
5 Streetcar (Green Line)
4 Trackless trolley
8 Commuter rail

1,076.55 Number of route miles (one-way)

700 Bus
46.0 Rapid transit
34.8 Streetcar
15.75 Trackless trolley
280 Commuter rail

78 District member cities and towns

1,038 Size of service area (square miles)

2,608,638 Population in service district (1980)

**What
is the
MBTA?**



Rapid Transit Lines

1985 Board of Directors



Frederick P. Salvucci
Chairman of the Board of Directors. The Chairman also serves as Secretary of the Executive Office of Transportation and Construction.



William F. Irvin
International Sub District Director, United Steel Workers of America; Vice President of Mass. AFL-CIO; actively involved in organized labor since 1950. Resides in Melrose.



Judith H. Robbins
Attleboro City Council President and professional public administrator; received BA from Stanford University and MPA from Suffolk University.

The Red Line is the longest of the MBTA's rapid transit lines, and the most heavily travelled, carrying 170,000 passengers daily for a base fare of 60 cents. It is divided into two sections: from Alewife station in North Cambridge, the Ashmont section is 12 miles one way; the Braintree section is 17.5 miles one way. The Red Line fleet totals 160 vehicles.

The Green Line is a 177 vehicle fleet surface and subway streetcar system consisting of four lines covering 33 total one-way miles. These branches operate from the central subway in the downtown area to Boston College (8 miles), Cleveland Circle (6.6 miles), Riverside (12 miles), and Arborway (5.7 miles). Total ridership on the Green Line stands at 170,000 daily riders, with a distance-based fare structure of 60 cents in the central subway to \$1.50 on the furthest points, payable on inbound trips only.

The Orange Line is used by nearly 100,000 daily passengers. It stretches 10.8 miles, from Forest Hills to Malden through downtown Boston. The fleet is composed of 120 rapid transit vehicles. Construction of the nearly completed Southwest Corridor Project will relocate the Orange Line from the present Washington Street elevated structure to a 4.7-mile depressed railroad bed between Forest Hills and Essex Stations.

The Blue Line is the shortest of the rapid transit lines. It has a vehicle fleet of 70 cars and carries more than 40,000 passengers each day. The line runs from Wonderland station in Revere, south along the Atlantic coast past Logan Airport and to downtown Boston. The Blue Line is usually the fastest, and always the most economical way to get to Logan Airport: train frequencies are approximately six minutes during rush hours, and a ride to the airport takes 12 minutes from downtown Boston and costs 60 cents.



Melba F. Hamilton
Former President - South Boston Resident Group, has worked with Massport on Airport Master Plan; past Employment Director for the South Boston Community Development Corporation.



Melitta A. Tillman
Financial planner, former educator and administrator; Alumna of Harvard Graduate School of Education. Presently resides in Boston.



James E. Smith
Lynn attorney and graduate of Harvard University's John F. Kennedy School of Government; former Executive Director of MBTA's Advisory Board; former member of Mass. General Court.



Scott M. Stearns, Jr.
Former director National Association of Realtors; former assessor of Town of Longmeadow. Presently lives in Agawam.

Back Bay/South End Station construction requires relocation of utility lines while maintaining railroad service and traffic flow. From the station passengers will be able to board Orange Line, Commuter Rail and Amtrak trains. When it opens in Spring, 1987, Back Bay/South End Station will provide a modern gateway to the city for workers, shoppers, students and visitors.



Red Line Northwest Extension The reopening of the Harvard Square bus tunnel marked the completion of a massive nine-year \$570 million construction project that brought rapid transit service for the first time to densely populated North Cambridge and Somerville. Four new stations at Harvard, Porter Square, Davis and Alewife were constructed (serving 48,000 riders daily) as well as 3.2 miles of new subway and a 2,000-car parking garage at Alewife.

Through a pioneering nationally recognized arts program, works were commissioned for permanent display at each station. A linear park designed and constructed with pedestrian and bicycle pathways extends from Davis to Alewife stations.

Southwest Corridor Construction of the massive \$740 million Southwest Corridor project began in 1979. It is the largest construction project ever undertaken in the history of the Commonwealth, funded by the largest federal grant ever awarded a transit project. It will serve an area containing one-fourth of Boston's population.

The 4.7 mile line will relocate the Orange Line from the Washington Street elevated structure to a depressed right of way a short distance away. The new line will reach from New England Medical Center Station in Boston's South Cove through Chinatown, the Back Bay/South End, and Roxbury to Forest Hills in Jamaica Plain. The project involves construction of track, power, and signal systems, nine new accessible stations, connections to Commuter Rail and Amtrak services, and new streets, bridges, and a 52-acre linear park. Adjacent parcels, left vacant after construction of I-95 was stopped in 1972, will be developed for housing, office, commercial, and light industrial development projects.

By the end of 1985 approximately 75 percent of the work on the Project's new rapid transit stations, three of which will also serve as railroad stations, was completed. A major portion of the new rapid transit rail lines was also completed. And approximately 98 percent of all work relating to line, bridge and street construction/reconstruction and a significant percent of systemwide work was accomplished. The new line is scheduled to be open for revenue service in spring, 1987.

By the end of 1985 approximately 75 percent of the work on the Southwest Corridor Project's nine new rapid transit stations was completed.

When open, the Southwest Corridor will link downtown Boston with outlying communities.

High-quality replacement service will be provided along the Washington Street Corridor when service on the old elevated structure ends.

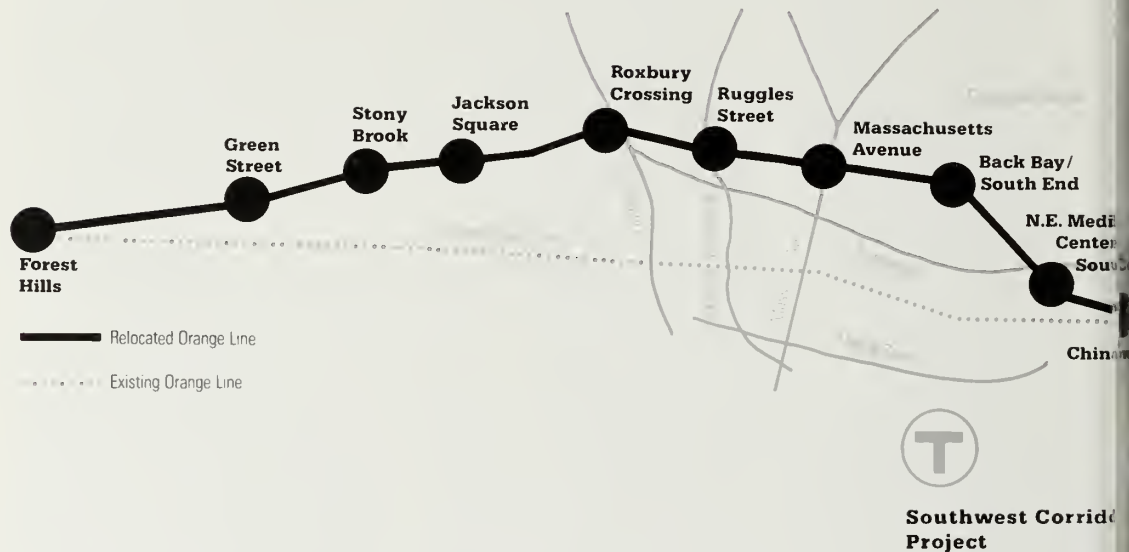


**The
MBTA
in 1985**

The elevated structure along Washington Street that dates from 1901 is scheduled for demolition following the relocation and opening of the new Orange Line. The MBTA has worked closely with city officials and community groups to ensure these neighborhoods are well served by alternate transportation during and after demolition of the old structure.

While construction moved forward, the community participation process for the development of land parcels along the Southwest Corridor Project commenced. A highlight of the year was the landmark signing of an agreement by Governor Dukakis, the MBTA and City of Boston, paving the way for the cooperative development of Parcel 18+ in Roxbury, the largest development site along the Corridor.

Also running through the Southwest Corridor is the Needham Branch Commuter Rail line between South Boston and Needham Heights. This service was suspended in 1979 to allow construction of the adjacent Southwest Corridor and the total reconstruction of the Needham Branch line. The Needham Branch track removal contract was completed in 1985. A \$10.2 million line construction contract was awarded while \$7.9 million in contracts for construction of stations and the signal system were awaiting award by year-end.



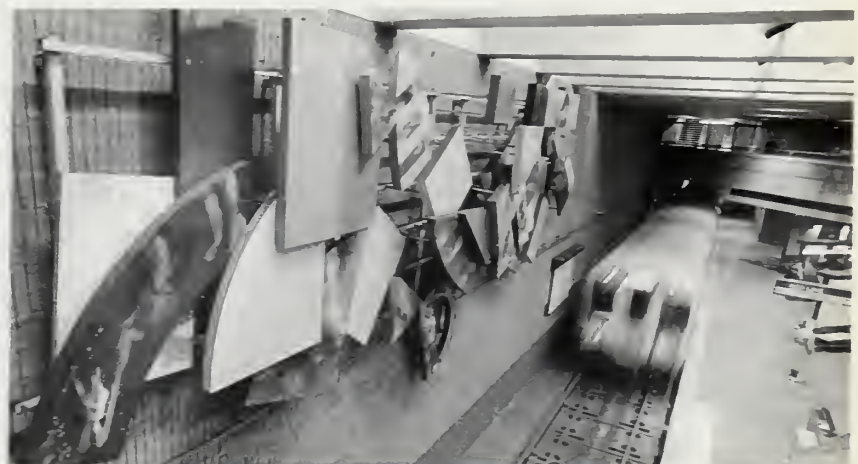
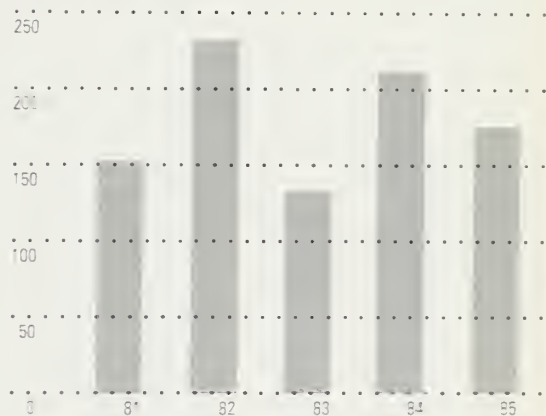
At the intersection of Tremont and Ruggles Streets, stately arched entranceways mark Ruggles Street Station. When completed, it will serve Lower Roxbury, the Fenway, Mission Hill, Northeastern University, the Museum of Fine Arts, and other educational and cultural institutions.

Opposite page: Sam Gilliam's "Sculpture with a D" is a painted aluminum sculpture at Davis Square Station in Somerville.

A massive nine-year \$570 million construction project that brought rapid transit service for the first time to North Cambridge and Somerville was completed in 1985.

Track reconstruction Major reconstruction projects are underway on the heavily traveled Red and Green Lines. Track replacement began on the Green Line between Boylston and North Station, and on the Red Line between Harvard and Charles Stations. The track overhaul projects require removal and replacement of track, track bed, ties, switches and related equipment. Construction work was done while the subway remained in operation—a difficult task requiring workers to remove and reconstruct sections at night, before the onset of the next day's commuter rush. Total cost was \$25 million.

Capital expenditures
Dollars in millions



South Station Transportation Center

Construction of a \$150 million, multi-modal South Station Transportation Terminal and office complex began in 1984. The project is designed to totally rehabilitate the station's historic neoclassical facade (placed on the National Register of Historic Places in 1975) and terminal building, add a new west wing, office space, new tracks and elevated platforms. Foundation is in place for future development to be carried out by the Boston Redevelopment Authority. The terminal will provide eventual access to inter/intra city bus and rail services, and a direct link to the Red Line rapid transit.

Construction now underway will totally rehabilitate South Station's 1899 historic neoclassical facade and terminal building into first-class offices and stores.

In 1985 the MBTA was well into Phase I of the project, while South Side commuter rail service and Amtrak service continued operating without major inconvenience to commuters.

Upon completion in 1988, the facility will include a rail passenger concourse and train room serving Amtrak and MBTA Commuter Rail lines, an elevated terminal for city and local buses, an airport bus link, a parking garage and extensive prime office and retail space. A new link will connect the Center with the Red Line's South Station.

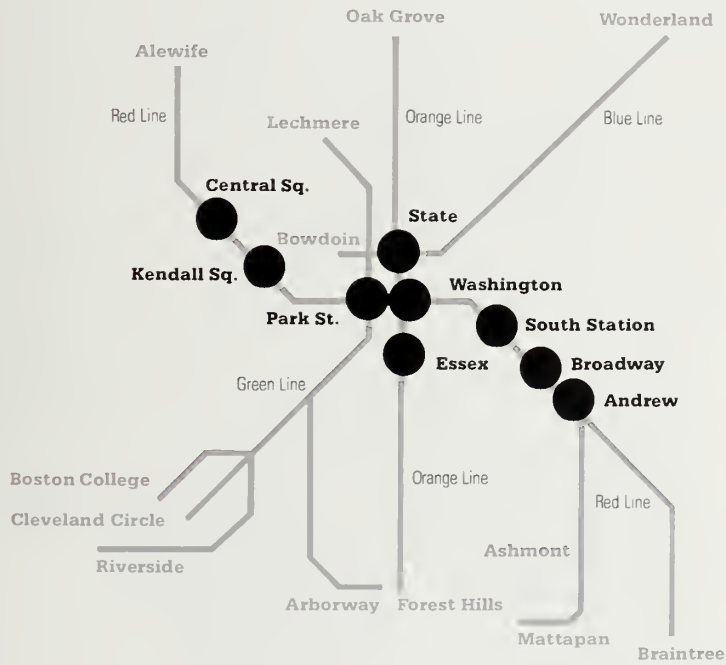
Work at the Cabot Rapid Transit Yards is necessary in order to facilitate train movements in and around the South Station area. The \$2.9 million phase I of track construction at Cabot was completed; a \$3.1 million contract for signal work was awarded and the \$1.5 million phase II track contract had been bid by year-end.

Rehabilitation and development of the South Station terminal building is being carried out by the MBTA in cooperation with the Executive Office of Transportation and Construction, the Boston Redevelopment Authority, the Federal Railway Administration and the Urban Mass Transportation Administration.



When completed, the South Station Transportation Center will provide a 45-berth bus terminal, new train platforms, a direct pedestrian link to modernized Red Line stations, an access ramp to the new Third Harbor Tunnel and expressways, a modern ticketing area, and a parking garage.

Station modernization Lengthening platforms at seven older Red Line and three Orange Line stations to accommodate six-car trains is the major objective of this \$80 million program. Also included are renovations to station interiors and exteriors, new escalators and elevators which will make these stations fully accessible by special needs riders, and new security systems. Major construction was well underway with work scheduled to be completed by early 1988.



Rapid Transit Lines

Current MBTA Routes

Marked are the seven Red Line and three Orange Line stations being modernized.



The lengthening of platforms to accommodate six-car trains is a crucial modification that will enable the MBTA to increase rush hour passenger-carrying capacity by 50 percent on Red and Orange Lines. Present platforms accommodate four-car trains

The MBTA has taken on increasing importance in providing transportation for downtown Boston's rapidly-growing workforce. The purchase of new buses, commuter rail coaches and Red and Green Line cars, and completion of platform lengthening projects will enable the Authority to increase peak-period capacity by 20 percent.



Rapid Transit/Streetcar "Throughput" is the term used to measure, by half-hour intervals during the entire 20-hour service day, the actual number of trains going by a specific point on the line. Throughput is compared with the scheduled number of trains to give MBTA management an instantaneous picture, via computer terminals, of exactly how the service is doing. Last year the MBTA achieved the highest level of service reliability since 1976 by delivering 98.6 percent of scheduled trips.

Frequency of trips on rapid transit lines range from every four minutes during peak periods to as long as 15 minutes for off peak late in the evening.

ast year the MBTA achieved the highest level of service reliability since 1976.

In 1985 the Red, Blue, Orange, and Green Lines provided 118 million passenger trips and over 19.7 million miles of revenue service.

Bus and van The MBTA provided a total of 44,116,457 miles of service on streetcars, buses, and rapid transit during 1985. This included 40,687,376 revenue miles of service, representing the fourth year in a row of increased service. Preventive maintenance capabilities were reinforced and reliability of service upgraded. MBTA system ridership increased by approximately 2.2 percent, to more than 163.9 million passenger trips.

To enhance the quality of the workforce, comprehensive training programs have been introduced with emphasis on passenger safety issues.

Rolling stock purchased included 200 new, sleek RTS buses from General Motors, half of them equipped with wheelchair lifts, to upgrade the fleet and to provide additional service for riders with special needs. This purchase was the first purchase of rolling stock using the recently allowed negotiated bid method, or "competitive negotiation." This policy takes into account not only price, but all other essentials in buying a bus that contributes to long-term service.

These buses showed a good record for maintenance and operating characteristics, and were well received by the public. In 1986 the MBTA will order 180 more. Half of all these buses will also be equipped with wheelchair lifts, and will be available on nearly all bus routes on both a fixed-route and call-ahead basis. To order a lift-equipped bus, passengers need only call the MBTA a day in advance, stating route number and time of trip. No special pass is needed.

MBTA bus route and schedule changes are carried out quarterly in order to adjust to changes in ridership and service requests. The MBTA produces schedule cards for each timetable change as part of its ongoing public information program.

Special bus services beyond the regularly scheduled service were necessary in several instances. These included regularly scheduled substitute shuttle bus service— as many as 55 buses utilized daily— on the Red and Green Lines because of the track reconstruction program. Supplemental bus service was also provided for Commuter Rail

There were significant ridership increases on all of the Authority's modes of transportation during 1985. Between 1982 and 1985 bus and subway ridership increased by 13 percent, the highest growth rate of any older subway system in the United States.



Service



**MBTA Service Area:
78 Member Cities
and Towns**



riders inconvenienced by the bridge fires in Beverly and North Station. Other extra service was added to special events, including First Night Celebration, July 4th Esplanade activities, Disney Week and various parades and concerts.

In addition, express bus service on holiday weeks between Logan Airport and Alewife and Quincy Adams Stations was tried on an experimental basis. The success of the program indicates that the service will be continued by the Massachusetts Port Authority on a permanent basis in 1986.

Door-to-door service for special needs individuals is provided by The Ride, the MBTA's paratransit program established by Governor Dukakis in 1977. From modest beginnings of two wheelchair lift-equipped vans covering an urban core area of some 12 square miles, The Ride, which was expanded to reach a larger area in 1985, includes over 60 specially equipped vans that provided 220,000 trips over a 200 square mile area. Cost to the rider is 75 cents per trip.

Forty-four percent of all trips are for work and 21 percent are for medical purposes. A recent survey found that 59 percent of all users are older than 65, and 40 percent reported annual income of less than \$5,000.

The MBTA's comprehensive network of special needs services extends beyond The Ride. With the completion of the new Orange Line and Red Line construction and modernization of older stations on both lines, 33 of the Authority's 53 stations will be accessible to people with special needs by the end of 1987. In addition, 21 commuter rail stations will be accessible within the next three years.

In keeping with federal guidelines, the MBTA also encourages private bus carriers to run specialized commuter service at reasonable cost to passengers within the T's district in those areas where the need for additional service exists.

The Authority also subsidized local private bus services in 7 communities to maximize service levels for the lowest cost. The Suburban Transportation Program allows individual communities to implement systems responsive to local transit needs. Communities within the MBTA district operate their own transit services, and receive funding for up to 65 percent of their net operating costs, with a maximum of \$60,000 per year for any one community. The communities choose their own types of services, which range from fixed-route and demand-responsive bus systems to a user-side subsidized taxi service for the elderly.



The Ride Service area includes 14 cities and towns as of December 31, 1985.



The Ride Service increased during 1985; hours of operations were extended on weekends and weeknights, holiday service was introduced on Thanksgiving and Christmas and five vehicles were added to the daily schedule. The area covered by The Ride (above) extends over 200 square miles.

The Special Needs Advisory Committee (SNAC) a group of consumers and transportation and human services professionals, has an active role in planning and implementing The Ride program.



The MBTA of today being expanded and modernized to meet the transportation needs of tomorrow. The MBTA is rehabilitating Red and Green Line track and signaling systems, building new Orange Line, grading commuter facilities and purchasing new equipment.

While participating communities receive up to 65 percent of their operating costs from the MBTA, they are assessed for approximately 15 percent of this cost, resulting in the town and the Authority sharing annual operating costs equally. This fiscal relationship provides an incentive both for the towns to manage their systems well and for the MBTA to carefully monitor operation and costs.

Trackless trolleys are buses that run on rubber wheels and have electric traction motors, connected with antennae-like poles to overhead wires. Their service in Boston began in 1936. The vehicle reached its peak in 1953 when 451 vehicles were in use. In time, however, diesel buses and electric streetcars replaced the trackless trolleys on most routes. Today four trackless trolley lines remain, concentrated in Cambridge. The fleet of 50 vehicles carry an estimated 19,000 daily riders over a combined total one-way route of 15.75 miles.

Commuter Rail in the Boston area is owned by the MBTA. Funding for the purchase of new equipment and subsidy for operating costs is provided by the federal government, and more recently, through the commitment of state bond funds supported by Governor Dukakis and the Massachusetts legislature.

The MBTA commuter rail system reached an overall record for on-time performance of almost 97 percent. In addition to 67 new coaches and 16 locomotives ordered, the Authority has undertaken almost \$70 million worth of improvements to railroad bridges, rights-of-way, and stations during the past two years. Major efforts focused on the restoration of service to northern branch Commuter Rail lines, severely damaged by fires that destroyed two bridges at North Station and Beverly/Salem in 1984.

The MBTA turned adversity into advantage at North Station by accelerating a program of track and station improvements from an originally scheduled 6 years to only 15 months while the fire damaged North Station trestle was out of service. New platforms, canopies, modern lighting, and continuously welded tracks for a smoother ride and less maintenance were installed. This work was valued at over \$16 million and allowed the return of full service to North Station.

The Beverly/Salem drawbridge was destroyed by fire in November, 1984, shutting down rail service past Salem. By December, 1985, a \$7.5 million bridge reconstruction was completed and service resumed. This one-year construction was an extraordinary feat. Planned improvements were accelerated in the downtime, including \$18 million in improvements to stations, tracks, and bridges north of Beverly. In all, nearly \$29 million of design, procurement and construction involving the Beverly-Salem Drawbridge and beyond were undertaken.

Commuter Boat The MBTA gave South Shore commuters an alternate means of travel (including subsidized private carrier bus and commuter boat service) during reconstruction of the Southeast Expressway in 1984. The Commuter Boat service proved to be so popular that it continued and grew after roadwork was completed.

In 1985 the Commuter Boat program carried an average of 1,600 daily riders on five vessels making 30 trips each day. In June two additional runs between Hingham and Rowes Wharf, Boston, were begun. Service was virtually 100 percent on-time (except for two days in September during Hurricane Gloria).



The MBTA Commuter Boat system became the largest and most comprehensive water mass transit system in the world. Mass.gov's largest transit system (over 100 boats) runs the waterway of Boston, and an annual \$100 million program of travel from the waterway system.



The 1950s brought
a new era of
passenger service. The
new performance
of the 4000 Series
of electric power
locomotives, in
addition to the
new 4000 Series
passenger coaches,
and the new
4000 Series
passenger cars,
were the result
of a new era of
passenger service.

One hundred new street cars for the Green Line, manufactured to meet the unique requirements of the nation's oldest subway system, were ordered in 1985.

Commuter Rail Improvement Program (CRIP) In addition to the trestles at North Station and at Beverly/Salem, the MBTA performs construction management for the Executive Office of Transportation and Construction (EOTC)'s railroad rehabilitation projects under an interagency agreement between the Authority and EOTC. The \$11.3 million Attleboro-Hyannis track rehabilitation project was completed. A contract for continuous welded rail: Attleboro-Hyannis, valued at \$9.3 million, was awarded and is well underway. By year-end, \$7.3 million worth of rehabilitation of signals, stations and bridges between Attleboro and Hyannis was in the final design phase.

Equipment replacement and renovation Renovation of the 88-car Red Line Bluebird fleet was completed in 1984. The rehabilitation of 76 Silverbird cars is well underway. One hundred new street cars for the Green Line, manufactured specifically to suit Boston's unique transportation needs, were ordered from the Kinki Sharyo company of Japan. They are gradually being put in service; all are due in service by the end of 1987. In addition, 58 new Red Line cars, manufactured by UTDC, and 67 new Commuter Rail cars from Messerschmitt-Bolkow- Blohm Company, of Donauworth, West Germany, are to be delivered in 1988 at a total cost of \$45.9 million.

Programs



Two men in dark uniforms stand in a workshop or factory setting. A large circular logo with the letter 'T' is visible in the background above them.



Contract settlements/labor relations

On August 12, 1985, three-year wage and pension agreements were finalized by the Authority and the 3,500 members of Carmen's Union Local 589, the largest of the agency's 27 bargaining units. The negotiations marked the first time both wage and pension contracts were considered together, and the first time in six years that costly arbitration was avoided.

All of the labor contracts currently in effect incorporate the Management Rights language of Chapter 581, Acts of 1980. The statute abolished automatic, cost-of-living increases and gave the Authority the right to hire part-time workers and to sub-contract for goods and services. Since 1981 this has saved an estimated \$83 million.

Anti-Crime campaign Increased resources and strong leadership, coupled with Governor Dukakis's seven-point MBTA Anti-Crime Program, are having a dramatic and meaningful impact on reducing crime on the system. The result has been a near doubling (from 69 to 126 officers) of the Authority's police force, a 33 percent drop in serious crime, and a 98 percent increase in arrests. A crime prevention training program was completed by 302 chief inspectors who were badged as special police officers, dramatically increasing police presence, and a modern \$4 million police communication system was installed. The MBTA Police Department is now one of the best trained and most professional departments in the Commonwealth.

An innovative anti-graffiti campaign ("if you spray, you pay") was launched: offenders are sentenced to community service in graffiti removal.

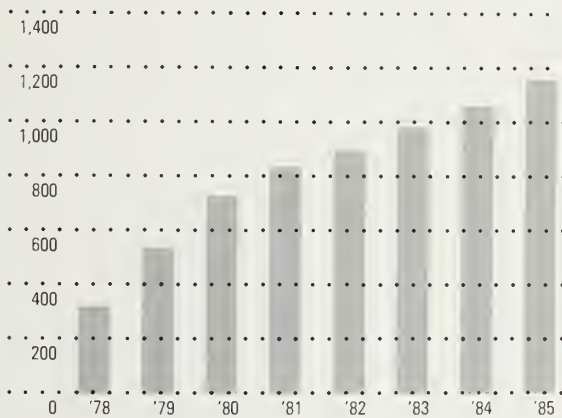
A modern, \$4 million communication system installed this year allows MBTA police to communicate between subway tunnels and police headquarters, as well as with police in communities throughout the region.



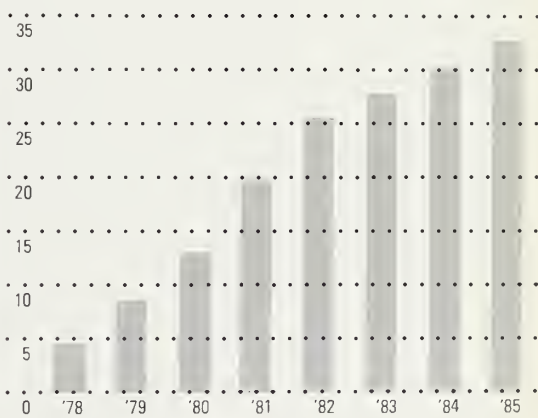
Almost 100,000 passes are sold each month.

Pass sales The MBTA Pass Program has grown enormously since its inception in 1974. Originally, "flash" passes were shown to bus operators and gatemen. Plastic encoded passes and electronic pass readers were introduced in 1980. In 1985 the Authority sold an average of 96,252 transit passes each month, which accounted for more than \$32 million, or 31 percent of MBTA revenue.

MBTA pass sales 1978-85
Passes sold in thousands



MBTA pass revenue 1978-85
Dollars in millions



History of the MBTA

Public transportation began with a three-mile ferry service across Boston Harbor to Charlestown in 1630. Horse-drawn vehicles provided mass transit over land as early as 1793, and for the next 50 years.

By the 1820s, the omnibus—a long version of the stage-coach—became a popular means of mass transit.

It was during the 1800s that the commuter rail network had its beginnings, when local rail systems were built by private companies between Boston and surrounding communities and beyond. Many of the lines reached north and west to the great Mill towns of the Merrimack Valley.

In January, 1889, Boston's first electric streetcar began operation. Massachusetts soon developed more street railway trackage per capita than any other state in the Union.

Extra service for First Night Free late night MBTA service on New Year's Eve was instituted. All MBTA service on rapid transit, trolleys, bus and commuter rail was free from 10:00 p.m. to 1:45 a.m. on New Year's Day.

Bicycle experiment Bicycles were allowed on the Red, Orange and Blue rapid transit lines on Sundays and Holidays (a maximum of two bikes confined to the rear of the train) in a six-month program started in June.

The MBTA has been a pioneer in the use of new financing tools to increase revenue and reduce costs.

Treasurer-Controller The MBTA has been a transit authority pioneer in effective use of new financing tools to produce income and save money.

In 1984, the Authority issued \$90 million in bonds using the Variable Rate Demand Obligation concept. This financing method uses short-term rates to finance long-term needs. Estimated 1985 savings come to over \$2.7 million. \$70 million in commercial paper program notes were also issued. These notes have short, variable maturities, resulting in lower interest rates than the fixed-term notes they replaced. The Commercial Paper Program saved the MBTA approximately \$295,000 in 1985.

Treasurer-Controller negotiated the MBTA's fifth "Safe Harbor" lease agreement, which netted approximately \$1,066,000. Federal law permits public transit agencies to sell their local share of mass transit vehicles to private corporations and lease them back for a nominal fee. Private taxpaying corporations are interested because they are, in effect, buying the tax-deductible depreciation when they buy the cars for the MBTA. In 1985 the Authority sold the tax benefits of certain rebuilt Red Line cars, rebuilt buses, and new buses. Thorough analysis of UMTA's Section 15/9 program resulted in an FY '85 Section 9 allocation of \$63.5 million.

In 1984, the Authority's letter of credit with the Urban Mass Transportation Administration was converted from the Regional Disbursing Office to the Treasury Financial Communication System. The Authority continues to benefit by receiving wire transfer payments on the work day following requests for funds, six days sooner than under the old system. This has resulted in timely payments to the Authority's contractors and eliminated interest income losses on bond investments.

The streets in the downtown business district had become so congested by the 1880s that some claimed a passenger could reach his destination more quickly by walking over the roofs of stalled trolley cars. To avoid the congestion, a streetcar tunnel under the Public Common and Garden was constructed. The Tremont Street Sub-

way opened in 1897, making Boston the first city in the country with a subway.

By 1897 all street railway companies were integrated under one management, and Boston became the first American city to have a unified transit system. The nation's

first underwater mass transit tunnel, the East Boston tunnel under Boston Harbor, was opened in December, 1904, highlighting a period of expansion in rapid transit tunnels, elevated railway lines, new surface routes, carhouses and streetcars.

On New Year's Day, 1899, South Station opened. By 1916 it was the nation's foremost railroad terminal, passing even Grand Central Terminal in New York. Ninety trains per hour traversed its 28 tracks and 817 trains came in and out each day.

Comprehensive program for mass transportation The MBTA must comply with planning and programming requirements established by State and Federal Law.

At the state level, the Executive Office of Transportation and Construction (EOTC) is responsible for the Comprehensive Program for Mass Transportation in accordance with Chapter 161A, Section 5 (g) and (h) of the General Laws of the Commonwealth, as amended by Section 7 of Chapter 1140, Acts of 1973.

The statute states that the Authority's capital investment program and plans for mass transportation "shall be developed in consultation and cooperation with the Authority, and in consultation with the Executive Office of Communities and Development, the Metropolitan Area Planning Council, and such other agencies of the Commonwealth or the Federal Government as may be concerned with said programs and plans." The program and any revisions are subject to the approval of the Advisory Board.

The program must include a long-range plan for the construction, reconstruction or alteration of mass transportation facilities within the Authority's district; a schedule for the implementation of the program, and comprehensive financial estimates of costs and revenues.

The current Program for Mass Transportation remains that approved by the Advisory Board on December 21, 1978.

To comply with federal requirements, the MBTA, as one of the six agencies constituting the Metropolitan Planning Organization (MPO), cooperated with those other agencies in preparation of several required certification documents: the Unified Planning Work Program, the Transportation Plan, and the Transportation Improvement Program. All of these documents were revised and approved by the MPO during 1985.

Photo courtesy of the State Transportation Library



◀ Known as an articulated trolley, this Boston subway train was two box cars which Boston Elevated engineers spliced together with a flexible mid-section. Operated in 1912, it was nicknamed Two Rooms and a Bath.

The station's busiest day was June 8, 1912, when 1,001 trains came and went during a streetcar strike. In 1915 the number of passengers that used the terminal (34 million) surpassed the 20.5 million people who used Logan Airport in 1985.

1985 service overview

| | Vehicle requirement* | Routes* | Route miles** | Daily typical weekday passengers | Station |
|--------------------------|-------------------------------|----------------|------------------------------------|----------------------------------|---------------|
| Bus | 726 | 154 | 700 | 380,000 | 10,000 approx |
| Rapid transit | | | | | |
| Red Lines | 124 | 2 | South Shore: 17.6 Ashmont: 11.7 | 170,000 | |
| Blue Line | 48 | 1 | 5.9 | 40,000 | |
| Orange Line | 84 | 1 | 10.8 | 100,000 | |
| Green Line | Streetcars; 94 LRVs, 34 PCCs | 5 | 34.8 | 170,000 | |
| Trackless trolley | 25 | 4 | 15.75 | 15,000 | |
| Commuter rail | 44 locomotives 159 coaches | 9 and branches | 244 | 50,000 | |

*Weekday a.m. peak period service.

**Trips and route-miles are one-way only.

Commuter rail

Miles from North Station:

Miles from South Station:

| Town | Miles | Town | Miles |
|------------------|-------|------------|-------|
| Fitchburg | 49.55 | Framingham | 22.5 |
| Lowell | 25.47 | Franklin | 22.5 |
| Haverhill | 32.93 | Attleboro | 22.5 |
| Ipswich/Rockport | 27.66 | Stoughton | 11.5 |

Photo courtesy of the State Transportation Library



◀ The Boylston Street Tunnel to what was then called Governors Square, was opened on October 3, 1914. It was later extended further to Kenmore Square during 1932.

Between 1900 and the 1940s, Boston's mass transit system expanded tremendously. Every year between 1914 and 1919 a new subway elevated route was opened. New rapid transit tunnels were constructed, elevated railway lines were extended into outlying communities, new surface routes were established, new car houses and terminals were built, and new streetcars were developed.

Revenue miles for total system, calendar year 1985

| | | Total trips | Revenue miles | Non-revenue miles | Total miles |
|------------------------|----------------------------|----------------|------------------|----------------------|----------------|
| Rapid transit | Orange Line | 188,371 | 3,960,067 | 57,202 | 4,017,269 |
| | Red Line (Ashmont) | 130,442 | 2,787,873 | 120,276 | 2,908,149 |
| | Red Line (Braintree) | 157,241 | 4,729,923 | 309,458 | 5,039,381 |
| | Blue Line | 205,296 | 2,485,778 | 47,731 | 2,533,509 |
| | Total Rapid transit | 681,350 | 13,963,641 | 534,667 | 14,498,308 |
| Surface transit | Streetcars | 427,050 | 5,151,540 | 42,692 | 5,194,232 |
| | Buses | 1,984,349 | 20,968,348 | 2,845,548 | 23,813,896 |
| | Trackless trolleys | 74,577 | 603,847 | 6,174 | 610,021 |
| | Total surface | 2,485,976 | 26,723,735 | 2,894,414 | 29,618,149 |
| | Total system | 3,167,326 | 40,687,376 | 3,429,081 | 44,116,457 |

Commuter Rail

| | 1981 | | 1982 | | 1983 | | 1984 | | 1985 | |
|---------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| | Passengers | Revenue | Passengers | Revenue | Passengers | Revenue | Passengers | Revenue | Passengers | Revenue |
| North Station | 5,404,160 | 7,652,366 | 5,843,502 | 9,047,101 | 6,496,055 | 9,896,744 | 5,421,147 | 8,118,019 | 5,640,275 | 8,420,122 |
| South Station | 3,748,929 | 5,288,012 | 4,199,984 | 6,257,858 | 4,849,957 | 6,943,984 | 5,737,023 | 8,667,617 | 6,190,158 | 9,263,914 |
| Total | 9,153,089 | 12,940,378 | 10,043,486 | 15,304,959 | 11,346,012 | 16,840,728 | 11,158,170 | 16,785,636 | 11,830,433 | 17,684,036 |

In 1922, Boston's first motor bus route was established, and in 1936, Boston opened its first trackless trolley line. For a brief time, Boston was the third largest operator of trackless trolleys in the country.

Boston was always an innovator in mass transportation. The first bus line, North Avenue Streetcar, began operations on February 24, 1922.



Photo courtesy of the State Transportation Library

Unlinked ridership by mode, by calendar year

| | | 1982 | 1983 | % increase 82-83 | 1984 | % increase 83-84 | 1985 | % incre: 84: |
|------------------------|---|-------------|-------------|---------------------|-------------|---------------------|-------------|-----------------|
| Rapid transit | Orange | 25,373,813 | 26,372,845 | | 26,992,846 | | 26,198,966 | |
| | Red | 27,122,542 | 28,982,522 | | 29,589,380 | | 33,337,787 | |
| | Blue | 6,397,919 | 6,148,140 | | 7,019,166 | | 7,940,209 | |
| | Green | 23,689,127 | 26,957,822 | | 27,327,404 | | 26,387,582 | |
| | Total | | | | | | | |
| | Rapid transit | 82,583,401 | 88,461,329 | 7.12% | 90,928,796 | 2.79% | 93,864,544 | |
| Surface transit | Bus-trackless trolley | 100,795,000 | 95,391,000 | | 99,309,000 | | 101,024,000 | |
| | Streetcar | 21,291,000 | 23,235,000 | | 25,548,000 | | 25,984,000 | |
| | Total surface | 122,086,000 | 118,626,000 | -2.83% | 124,857,000 | 5.25% | 127,008,000 | |
| | Total system (unlinked*) | 204,669,401 | 207,087,329 | 1.18% | 215,785,796 | 4.20% | 220,872,544 | |
| | Estimated total system riders (linked**) | 145 mil | 154 mil | 6.21% | 160.3 mil | 4.09% | 163.9 mil | |

*Unlinked trips: ridership on individual lines. Passengers are counted each time they use an individual bus or rapid transit line. Passengers who transfer are counted more than once.

**Linked trips: count of passengers using the MBTA system, based on estimates of primary mode or line used for trip. Does not count passengers more than once.

The transit network continued to grow under a new agency, created in 1947, called the Metropolitan Transit Authority (MTA). Composed of 14 cities and towns, the MTA ran the system from 1948 through 1964.

At that time the MTA was renamed the Massachusetts Bay Transportation Authority and expanded to include 78 cities and towns. Its net cost of service was apportioned

between the member communities and the Commonwealth. Operating costs continued to outdistance revenue from fares paid by passengers.

Massachusetts' commitment to public transportation was reinforced in 1971, when all highway construction surrounding metropolitan Boston was stopped for a period of two years



Revenue by mode, by calendar year

Dollars in millions

| | | 1982 | 1983 | % increase 82-83 | 1984 | % increase 83-84 | 1985 | % increase 84-85 |
|------------------------|----------------------|---------|---------|---------------------|----------|---------------------|----------|---------------------|
| Rapid transit | Orange | \$14.87 | \$13.41 | | \$ 13.97 | | \$ 14.23 | |
| | Red | \$20.20 | \$17.03 | | \$ 17.80 | | \$ 18.63 | |
| | Blue | \$ 3.29 | \$ 3.19 | | \$ 3.48 | | \$ 4.32 | |
| | Green | \$13.09 | \$15.68 | | \$ 17.86 | | \$ 19.46 | |
| | Total | | | | | | | |
| | Rapid transit | \$51.45 | \$49.31 | - 4.16% | \$ 53.11 | 7.71% | \$ 56.64 | 5.10% |
| Surface transit | Bus | \$32.99 | \$34.62 | | \$ 36.24 | | \$ 35.23 | |
| | Trackless trolley | \$ 0.88 | \$ 1.25 | | \$ 1.11 | | \$ 0.93 | |
| | Streetcar | \$ 7.15 | \$ 8.74 | | \$ 9.61 | | \$ 10.61 | |
| | Total surface | \$41.02 | \$44.61 | 8.75% | \$ 46.96 | 5.27% | \$ 46.77 | 1.68% |
| | Miscellaneous | \$ 0.79 | \$ 1.03 | — | \$ 0.95 | — | \$ 1.10 | — |
| Total revenue | \$93.26 | \$94.95 | 1.81% | \$101.02 | 6.39% | \$104.51 | 3.51% | |

Note:

Rapid transit fare reduction May 1, 1982

Base fare changed \$.75 to \$.60 (20% reduction)

1982 Rapid transit revenue corrected for \$.60 fare is: \$47.9 million

◀ **The Southwest Corridor project will relocate the Orange Line from the present Washington Street elevated structure to a 4.7-mile depressed railroad bed stretching from downtown Boston to Jamaica Plain.**

until an evaluation of the role of public transportation in the city's future was completed. After the moratorium ended, it was proposed for the first time in United States transportation history that highway funds be used to support mass transit construction.

Since 1971, Massachusetts has authorized over \$900 million in local funds for mass transit improvements.

In 57 of the 67 years since 1918, when five public trustees began operating the Boston Elevated Railway (BERY), public transportation has incurred a deficit. The eight years of surplus were never more than \$1.9 million. Deficits ranged from \$2.8 million to \$21 million, assessable on the

communities, during the time (from 1948 to 1964) the Metropolitan Transit Authority (MTA) ran the system. The Massachusetts Bay Transportation Authority (MBTA) is the successor to the MTA; its net cost of service is apportioned between the 78 member communities and the rest of the Commonwealth.



The new Red Line cars are
 made of stainless steel
 and are built in
 the United States. They
 are 100 feet long and
 10 feet wide. They
 can carry up to 1,000
 passengers. The new
 cars are expected to
 be in service by 2000.

Massachusetts Bay Transportation Authority

Balance sheet

As of December 31, 1985 and 1984

Dollars in thousands

| | 1985 | 1984 |
|---|--------------------|--------------------|
| Assets | | |
| Transportation property | | |
| At cost (Notes 1 and 6): | | |
| Transportation property in service | \$2,065,373 | \$1,614,998 |
| Less: Accumulated depreciation | 378,062 | 341,632 |
| | \$1,687,311 | \$1,273,366 |
| Construction in progress | 936,185 | 1,068,548 |
| Property held for expansion (Note 8) | 13,574 | 13,574 |
| Total transportation property | \$2,637,070 | \$2,355,488 |
| Special funds | | |
| Consisting of cash and short-term investments: | | |
| Settlement funds (Note 7) | \$ 54,797 | \$ 57,245 |
| Construction funds | 68,481 | 56,087 |
| Federal grant and other special funds (Notes 1 and 6) | 90 | 36 |
| Total special funds | \$ 123,368 | \$ 113,368 |
| Deferred charges | \$ 12,286 | \$ 11,433 |
| Current assets | | |
| Cash | \$ 2,541 | \$ 10,632 |
| Temporary cash investments | 2,834 | 21,135 |
| Accounts receivable: | | |
| Commonwealth of Massachusetts (Notes 1 and 2) | 243,169 | 239,717 |
| Federal Department of Transportation (Note 3) | 20,421 | — |
| Other | 7,309 | 11,014 |
| Materials and supplies, at average cost | 25,297 | 23,026 |
| Prepaid expenses | 4,239 | 7,001 |
| Total current assets | \$ 305,810 | \$ 312,525 |
| Total assets | \$3,078,534 | \$2,792,814 |
| Liabilities | | |
| Long-term debt | | |
| Exclusive of current maturities: | | |
| Bonds payable (See separate statement and Note 5) | \$ 732,370 | \$ 665,589 |
| Unreimbursed cost of service grants | \$ (47,779) | \$ (42,483) |
| (Note 1) | | |
| (Notes 1, 6 and 8): | | |
| Federal grants | \$2,104,360 | \$1,875,647 |
| State and local grants | 53,186 | 41,982 |
| | \$2,157,546 | \$1,917,629 |
| Less: Accumulated amortization | 197,893 | 166,010 |
| Total grants | \$1,959,653 | \$1,751,619 |
| Commitments and contingencies | | |
| (Notes 1, 6, 7, 8 and 10) | | |
| Deferred credits | \$ 69,205 | \$ 65,604 |
| (Note 7) | | |
| Current liabilities | | |
| Current maturities of bonds payable | \$ 29,456 | \$ 22,956 |
| Short-term borrowings (Note 5) | 245,000 | 247,000 |
| Accounts payable | 22,566 | 27,742 |
| Accrued liabilities: | | |
| Payroll (Note 1) | 20,485 | 18,924 |
| Interest | 25,459 | 21,956 |
| Other | 22,119 | 13,907 |
| Total current liabilities | \$ 365,085 | \$ 352,485 |
| Total liabilities | \$3,078,534 | \$2,792,814 |

The accompanying notes are an integral part of these financial statements.

Massachusetts Bay Transportation Authority
Statement of revenue and cost of service

For the years ended December 31, 1985 and 1984

Dollars in thousands

| | | 1985 | |
|--|--|---------------------------------|--------------------|
| Operating revenue | Not including local and federal assistance: | | |
| | Revenue from transportation | \$ 104,508 | \$ 101,111 |
| | Revenue from other railway operations | 4,148 | 4,148 |
| | Total operating revenue | \$ 108,656 | \$ 105,259 |
| Operating wages and related employee benefits | Wages | \$ 175,688 | \$ 162,711 |
| | Medical and dental insurance | 23,851 | 22,911 |
| | Pensions (Note 9) | 26,633 | 22,333 |
| | Social security taxes | 13,740 | 12,333 |
| | Workers' compensation (Note 1) | 10,329 | 9,333 |
| | Other | 1,869 | 1,500 |
| | Employee benefit and general and administrative costs capitalized (Note 1) | (9,340) | (9,333) |
| | Total operating wages and related benefits | \$ 242,770 | \$ 218,838 |
| Operating expenses | Materials and services | \$ 49,865 | \$ 47,155 |
| | Depreciation and amortization (Note 1) | 48,511 | 41,000 |
| | Fuel | 21,042 | 23,777 |
| | Injuries and damages (Note 1) | 6,243 | 7,777 |
| | Commuter railroad expense, net (Note 4) | 53,051 | 51,333 |
| | Other | 1,823 | 1,823 |
| | | Total operating expenses | \$ 180,535 |
| | Operating loss | \$(314,649) | \$(280,399) |
| Non-operating income | Interest income | \$ 8,754 | \$ 7,188 |
| | Sale of tax benefits | 1,106 | 1,106 |
| | Other | — | — |
| | Total non-operating income | \$ 9,860 | \$ 8,294 |
| Interest expense | Bonds payable | \$ (51,047) | \$ (46,700) |
| | Other | (14,838) | (15,266) |
| | Total interest expense | \$ (65,885) | \$ (61,966) |
| | Cost of service in excess of revenue (Note 1) | \$(370,674) | \$(334,071) |

The accompanying notes are an integral part of these financial statements.

Massachusetts Bay Transportation Authority
Statement of unreimbursed cost of service

For the years ended December 31, 1985 and 1984

Dollars in thousands

| | 1985 | 1984 |
|--|-------------|-------------|
| Balance at beginning of year | \$ (42,483) | \$ (46,831) |
| Add: | | |
| Cost of service in excess of revenue | \$(370,674) | \$(331,739) |
| Deduct: | | |
| Net cost of service reimbursable by the Commonwealth of Massachusetts (Note 2) | \$ 240,571 | \$ 219,357 |
| Contract assistance from the Commonwealth for debt service pursuant to Section 28 of Chapter 161A of the General Laws, as amended (Note 2) | 61,994 | 54,094 |
| Other contract assistance (Notes 2 and 4) | 9,198 | 7,681 |
| Reimbursement of the Authority's net cost of service (Note 1) | \$ 311,763 | \$ 281,132 |
| Federal operating assistance pursuant to Sections 5 and 9 of the Urban Mass Transportation Act of 1964, as amended (Note 3) | \$ 20,421 | \$ 26,499 |
| Reimbursement of commuter railroad expense by government entities outside the Authority's area (Note 4) | 790 | 495 |
| State diesel and gasoline fuel taxes reimbursable to the Authority in accordance with Section 2 of Chapter 563 of the Acts of 1964 | 461 | 464 |
| Other reimbursements | \$ 21,672 | \$ 27,458 |
| Amortization of grants (Notes 1 and 6) | \$ 31,944 | \$ 27,497 |
| Balance at end of year | \$ (47,779) | \$ (42,483) |

The accompanying notes are an integral part of these financial statements.

Massachusetts Bay Transportation Authority
Statement of changes in financial position

For the years ended December 31, 1985 and 1984

Dollars in thousands

| | | 1985 | |
|---|--|--------------------|--------------|
| Operations | Cash was used for: | | |
| | Cost of service in excess of revenue | \$370,674 | \$331 |
| | Charges to cost of service not requiring current expenditure of cash: | | |
| | Depreciation and amortization of deferred charges | (48,511) | (41) |
| | Amortization of original issue discount | (909) | |
| | Cash used for operations | \$321,254 | \$289 |
| | Increase (decrease) in working capital except for cash and temporary cash investments | 7,077 | (6) |
| | Payment of bonds payable | 22,416 | 21 |
| | Cash used for operations and bond payments | \$350,747 | \$304 |
| | Cash was provided for operations and bond payments by: | | |
| | Reimbursement of the Authority's net cost of service | \$311,763 | \$281 |
| | Other reimbursements | 21,672 | 27 |
| | Other | (1,658) | |
| Cash provided for operations and bond payments | \$331,777 | \$308 | |
| Capital and financing activities | Cash was used for: | | |
| | Additions to transportation property, net | \$329,439 | \$313 |
| | Decrease in long-term debt, due to increase in current maturities | 6,501 | 1 |
| | Increase in construction funds | 95,000 | 90 |
| | Total cash used | \$430,940 | \$404 |
| | Cash was provided by: | | |
| | Grants from federal and other sources, net | \$239,917 | \$235 |
| | Increase in deferred credits | 3,601 | 6 |
| | Issuance of bonds | 95,000 | 90 |
| | Forgiveness of federal loan | — | 16 |
| | Use of construction and other special funds | 85,000 | 56 |
| | Total cash provided | \$423,518 | \$404 |
| | Increase (decrease) in cash and temporary cash investments | \$ (26,392) | \$ 3 |
| Cash and temporary cash investments: | | | |
| Beginning of year | 31,767 | 28 | |
| End of year | \$ 5,375 | \$ 31 | |

The accompanying notes are an integral part of these financial statements.

Massachusetts Bay Transportation Authority
Statement of bonds payable

December 31, 1985 and 1984
(Notes 5 and 6)

Massachusetts Bay Transportation Authority General Transportation System Bonds issued under General Laws, Chapter 161A, Section 23 of the Commonwealth of Massachusetts, are all payable in annual installments

on March 1; interest is payable semiannually on March 1 and September 1. The bonds were issued to provide funds for the financing of the Authority's plant and equipment improvement program (dollar amounts in thousands).

| Description | Year of maturity | Approximate annual principal payments | Effective interest rate | Bonds outstanding December 31, | |
|---|------------------|---------------------------------------|-------------------------|--------------------------------|------------------|
| | | | | 1985 | 1984 |
| 67 Series A Bonds dated March 1, 1967 | 2007 | \$2,600 | 3.80% | \$ 57,200 | \$ 59,800 |
| 70 Series A Bonds dated September 1, 1970 | 2010 | 1,540 | 6.43 | 38,400 | 39,940 |
| 72 Series A Bonds dated September 1, 1972 | 2012 | 865 | 5.28 | 23,255 | 24,120 |
| 74 Series A Bonds dated June 1, 1974 | 2014 | 1,800 | 6.39 | 51,900 | 54,000 |
| 77 Series A Bonds dated September 1, 1977 | 2017 | 2,510 | 6.18 | 63,470 | 65,980 |
| 79 Series A Bonds dated May 1, 1979 | 2019 | 1,700 | 6.92 | 49,800 | 51,500 |
| 81 Series A Bonds dated October 1, 1981 | 2001 | 2,250 | 12.47 | 11,250 | 13,500 |
| 82 Series A Bonds dated April 1, 1982 | 2005 | 2,975 | 11.39 | 23,242 | 26,433 |
| 83 Series A Bonds dated March 15, 1983 | 2008 | 3,000 | 9.31 | 110,753 | 111,579 |
| 83 Series A Refunding Bonds dated August 15, 1983 | 2004 | 900 | 9.11 | 70,040 | 70,940 |
| 84 Series A Variable Interest Rate Bonds dated November 1, 1984 | 2014 | 365 | 5.63 | 89,635 | 90,000 |
| 85 Series A Bonds dated August 1, 1985 | 2006 | 1,870 | 8.32 | 95,000 | — |
| Total General Transportation System Bonds payable | | | | \$683,945 | \$607,792 |

Boston Metropolitan District (BMD) Bonds were issued for transit purposes prior to formation of the Massachusetts Bay Transportation Authority in 1964. For all issues

except the Equipment Bonds, bond maturities in excess of the stated annual payments are refinanced and have been classified as long-term debt (dollar amounts in thousands).

| Description | Year of maturity | Approximate annual principal payments | Effective interest rate | Bonds outstanding December 31, | |
|---|------------------|---------------------------------------|-------------------------|--------------------------------|------------------|
| | | | | 1985 | 1984 |
| Boston Elevated Railway Company and Metropolitan Transit Authority Debt | 2020 | \$1,000 | 6.32% | \$ 34,918 | \$ 35,918 |
| Acquisition of City of Boston Transit Properties | 2024 | \$ 536 | 5.14% | \$ 20,914 | \$ 21,451 |
| Equipment Serial Bonds | 1987 | \$ 127 | 2.90% | \$ 255 | \$ 382 |
| | 1988 | 131 | 2.90 | 393 | 524 |
| | 1993 | 169 | 3.00 | 1,352 | 1,521 |
| | 1993 | 100 | 3.20 | 800 | 900 |
| | | | | \$ 2,800 | \$ 3,327 |
| Construction Bonds | 1988 | \$ 55 | 3.00% | \$ 2,640 | \$ 2,695 |
| | 1989 | 70 | 3.60 | 3,414 | 3,483 |
| | 1990 | 19 | 3.51 | 950 | 969 |
| | 1992 | 50 | 8.75 | 350 | 400 |
| | 1993 | 40 | 3.20 | 2,120 | 2,160 |
| | 2002 | 575 | 9.30 | 9,775 | 10,350 |
| | | | | \$ 19,249 | \$ 20,057 |
| Total BMD Bonds payable | | | | \$ 77,881 | \$ 80,753 |
| Total bonds payable | | | | \$761,826 | \$688,545 |
| Less: Current maturities of bonds payable | | | | 29,456 | 22,956 |
| Total bonds payable, long-term | | | | \$732,370 | \$665,589 |

The accompanying notes are an integral part of these financial statements.

Massachusetts Bay Transportation Authority

Notes to financial statements

December 31, 1985 and 1984

Tabular amounts in thousands of dollars

**Note 1:
Summary of
significant
accounting policies**

Unreimbursed cost of service The legislative act under which the Massachusetts Bay Transportation Authority (the "Authority") was established provides, among other things, that the Commonwealth of Massachusetts (the "Commonwealth") shall reimburse the Authority for its *Net cost of service*, as defined. This amount, to the extent it exceeds contract assistance (see Note 2), is then assessed by the Commonwealth to the cities and towns in the Greater Boston Metropolitan Area constituting the Authority.

The *Cost of service in excess of revenue* presented on the *Statement of revenue and cost of service* differs from the *Net cost of service* because the Authority follows generally accepted accounting principles for financial reporting purposes. The following table reconciles the Authority's *Cost of service in excess of revenue* to its *Net cost of service* for the years ended December 31, 1985 and 1984:

| | 1985 | 1984 |
|--|-----------|----------|
| Cost of service in excess of revenue | \$370,674 | \$33,000 |
| Expenses not assessable: | | |
| Depreciation and amortization in excess of bond principal payments | \$ 26,478 | \$ 2,000 |
| Injuries and damages expense | 3,500 | |
| Provision for workers' compensation | 4,500 | |
| Interest on federal loans, net of related property income | — | |
| Cumulative property income | — | |
| Accrual for vacation pay | 514 | |
| Accrual for back pay settlement | 2,247 | |
| Reimbursements for: | | |
| Contracted passenger service outside the Authority's area | 790 | |
| State fuel taxes | 461 | |
| Federal operating assistance | 20,421 | 2,000 |
| | \$ 58,911 | \$ 5,000 |
| Net cost of service | \$311,763 | \$28,000 |

As discussed in the June 30, 1985 financial statements, the Authority incurred \$3.5 million of injuries and damages expense in excess of the \$5 million budget during fiscal year 1985. Expenses incurred in excess of budget have not been included in the assessment of *Net cost of service*. Accordingly, \$3.5 million of unapproved injuries and damages expenses, which are included in the *Cost of service in excess of revenue* under generally accepted accounting principles, have been excluded from the *Net cost of service* amount presented in the reconciliation shown above.

Change in year end Since 1971, the Authority has operated, and its *Net cost of service* has been assessed by the Commonwealth, on a calendar year basis. Legislation enacted in 1980, however, stipulated that, as of July 1, 1983, the Authority's fiscal year be changed from the calendar year to a July 1–June 30 fiscal year to coincide with the fiscal year of the Commonwealth and its cities and towns. Under other provisions of its enabling legislation, the Authority will continue to report its *Net cost of service* to the Commonwealth on a calendar year basis for reimbursement and assessment purposes.

Transportation property Transportation property is stated at historical cost. These costs include the Authority's labor costs for employees working on capital projects, related fringe benefits, and an allocated share of general and administrative costs.

Depreciation Depreciation is provided in the accounts based on the straight-line method at rates which are designed to amortize the original cost of the property over its estimated useful life. The major categories of transportation property service and the depreciation rates used in 1985 are:

| Rates | Low | High | Average |
|---------------------|-------------|-------------|---------|
| Ways and structures | 1.7% | 10.0% | |
| Equipment | 2.0% | 20.0% | |
| Land | — | — | |
| Depreciation | | 1985 | |
| Ways and structures | \$1,515,375 | \$1,094,000 | |
| Equipment | 458,800 | 425,000 | |
| Land | 91,198 | 91,000 | |
| Total | \$2,065,373 | \$1,610,000 | |

Deferred charges Certain costs incurred by the Authority, primarily related to the expansion and modernization of its transportation system, have been deferred. These costs are amortized by charges to cost of service over the future periods in which the benefit to the Authority is estimated to be realized.

Casualty and liability costs The Authority is engaged in numerous matters of routine litigation which include tort and other claims for injuries and damages. The Authority's public liability policies were renewed as of December 15, 1985, at which point self-insurance levels for rapid transit lines were raised from \$1,000,000 to \$2,000,000 per incident (\$500,000 to \$1,000,000 for non-rail incidents). Insurance coverage of \$5,000,000 is carried on claims in excess of the self-insurance levels with additional coverage provided on a claims-made basis on amounts paid greater than \$5,000,000 up to a maximum limit of \$15,000,000. As of May 1, 1986, the Authority is self-insured for the first \$7,000,000 of commuter rail claims. As of May 1, 1985, the Authority has \$10,000,000 of commuter rail coverage in excess of the self-insurance level. This coverage is at levels significantly lower than carried in prior years however, in the opinion of the General Counsel to the Authority, payments of claims by the Authority for amounts not covered by insurance, in the aggregate, are not expected to have a materially adverse effect on the accompanying financial statements. Coincident with the changes in the public liability coverage, the Authority has experienced significant increases in the cost of its insurance premiums, however, the increase in premiums has been anticipated to some extent in the budgets for fiscal year 1986 and future periods.

Injuries and damages expense for the current year includes \$920,000 for settlements made during calendar 1985 which were paid subsequent to year end.

Other cases and claims include disputes with contractors and others arising out of the Authority's capital construction program. In the opinion of the General Counsel to the Authority, amounts reasonably expected to be paid by the Authority would be within the scope of grant funds and other monies available to the Authority for the respective projects.

Workers' compensation expense The Authority is self-insured for settlements of workers' compensation to the extent of \$200,000 per occurrence. Insurance is carried for settlements in excess of that amount. The accompanying financial statements include a reserve for claims not yet paid as of year end. The Authority includes such amounts in its *Net cost of service* only to the extent that claims have been paid.

Accounting for compensated absences

In accordance with the National Council on Governmental Accounting Statement No. 4, the Authority accrues for vested vacation pay when it is earned. The amount of vested vacation pay accrued as of December 31, 1985 and December 31, 1984 was \$11,912,000 and \$11,397,000, respectively. As a result of using the accrual basis of accounting for compensated absences, the cost of service in excess of revenue was increased for calendar years 1985 and 1984 by \$514,000 and \$777,000, respectively.

Grants The Authority receives capital grants from certain governmental agencies to be used for various purposes connected with the planning, modernization and expansion of transportation facilities and equipment. Amortization of these grants begins when the related facilities and equipment are put into service. The grants are then amortized over the shorter of the estimated useful life of the assets or forty years. The amortization is reflected as a reduction of unreimbursed cost of service (see Note 6).

The Authority also receives grants to fund its operating deficits from the Commonwealth and the federal government (see Notes 2 and 3).

Reclassification of prior year amounts Certain amounts on the 1984 balance sheet and statement of changes in financial position have been reclassified in order to be consistent with the 1985 presentation.

Massachusetts Bay Transportation Authority

Notes to financial statements/continued

December 31, 1985 and 1984

Tabular amounts in thousands of dollars

**Note 2:
Contract
assistance from
the Commonwealth**

The Authority is reimbursed for its *Net cost of service* by the Commonwealth. A portion of this reimbursement is provided specifically in the form of contract assistance for debt service. The Commonwealth assesses a portion of the *Net cost of service*, after reducing it by the reimbursement for debt service, to the cities and towns constituting the Authority, up to the legislated limit. Contract assistance for calendar years 1985 and 1984 is summarized as follows:

Debt service The legislative act authorizing the Authority to issue debt securities provides for contract assistance for the payment of annual debt service costs on bonds issued by the Authority as follows: on the bonds issued prior to January 1, 1971, the debt service is eligible for contract assistance at either 50% or 90%, as provided by contract; on bonds and bond anticipation notes issued after January 1, 1971, the debt service is eligible for contract assistance at 90%. However, regardless of when issued, contract assistance, under the current statute, will not be available on the debt service of more than \$1,120,180,000 of bonds outstanding at any one time.

Additionally, the Commonwealth pays a maximum of \$3,000 annually for the debt service relating to BMD debt. The Authority was eligible for contract assistance of \$61,994,000 in calendar 1985 and \$54,094,000 in calendar 1984 relating to debt service.

Operating assistance The Authority's *Net cost of service* reimbursable by the Commonwealth, after deducting debt service and commuter rail operations contract assistance is \$240,571,000 for calendar 1985 and \$219,357,000 for calendar 1984. The amount to be assessed by the Commonwealth in the calendar year 1985 to the cities and towns comprising the Authority is limited to \$104,862,000, which is 102½% of the amount assessed (including state borrowing charges) in calendar year 1984.

Contract assistance for commuter rail service outside the Authority's district is provided by statute each year. Contract assistance for commuter rail service amounted to \$9,198,000 in calendar 1985 and \$7,681,000 in calendar 1984 (see Note

**Note 3:
Federal operating
assistance**

The Surface Transportation Act of 1982 (the Surface Act) replaced previous assistance under Section 5 with a new Section 9 assistance under which both capital and operating grants are made. The Authority received \$20,421,000 of total federal operating assistance in calendar 1985 and \$26,499,000 in calendar

1984. Due to recent reductions in the amount of federal operating assistance available for mass transit, the Authority received \$918,000 less than anticipated in federal operating assistance for calendar year 1985.

**Note 4:
Commuter railroad
subsides**

Under Chapter 161A Section 3(f) of the General Laws, the Authority may enter into agreements with private transportation companies, railroads and other concerns providing for joint or cooperative operation of any mass transportation facility and for operation and use of any mass transportation facility and equipment for the account of the Authority.

On February 23, 1982, the Authority entered into a new five-year operating agreement with the Boston and Maine Corporation, Debtor (B & M), to provide commuter railroad service over the

Authority's rail lines. The Authority has agreed to pay the B & M for direct and indirect service expenses, a management fee for ridership and performance incentives that may be reduced in case of noncompliance with the agreement. In the event the Advisory Board fails to approve the annual budgetary provision for any of this service, the agreement shall terminate subject to certain labor protection obligations.

The costs and related operating assistance of commuter rail service, excluding depreciation, are summarized below:

| | 1985 | 1984 |
|--|-----------------|-----------------|
| Passenger revenues | \$15,388 | \$16,600 |
| Operating costs, excluding depreciation of Authority-owned property devoted to commuter rail service | 68,439 | 66,900 |
| Commuter railroad expense reflected in <i>Statement of revenue and cost of service</i> | \$53,051 | \$50,300 |
| Less: Operating assistance from state and local sources: | | |
| State contract assistance | (9,198) | (7,681) |
| Reimbursement from entities outside the Authority's area | (790) | |
| Total cost, net of commuter rail operating assistance | \$43,063 | \$42,619 |

**Note 5:
Short-term
Borrowings and
Long-term debt**

Short-term borrowings outstanding as of December 31, 1985 and 1984 are as follows:

| | 1985 | 1984 |
|------------------|------------------|------------------|
| Notes payable | \$175,000 | \$160,000 |
| Commercial paper | 70,000 | 87,000 |
| Total | \$245,000 | \$247,000 |

On May 16, 1984, the Board of Directors approved a Commercial Paper Program which allows the Authority to issue up to \$100,000,000 in commercial paper. Substantially all of the commercial paper outstanding at December 31, 1985 has been subsequently rolled over at interest rates ranging from 3.8% to 4.6%.

The following notes payable were outstanding as of December 31, 1985:

| Due date | Interest rate | Principal amount |
|-----------------|---------------|------------------|
| March 5, 1986 | 5.75% | \$140,000 |
| October 1, 1986 | 5.90% | 20,000 |
| October 1, 1986 | 6.00% | 15,000 |
| | | \$175,000 |

On March 5, 1986, \$125,000,000 of notes payable were issued: \$90,000,000 at an interest rate of 5.25% maturing March 5, 1987 and \$35,000,000 at an interest rate of 5.0% maturing October 1, 1986. These notes were used to refinance a portion of the \$140,000,000 due March 5, 1986. The remaining \$15,000,000 of notes maturing were repaid through an advance from the Commonwealth on the *Net cost of service* calendar year 1985.

Approximate annual maturities of long-term debt as of December 31, 1985 are as follows:

| | |
|--------------|------------------|
| 1986 | \$ 29,456 |
| 1987 | 29,132 |
| 1988 | 31,730 |
| 1989 | 32,319 |
| 1990 | 30,317 |
| Thereafter | 623,262 |
| Total | \$776,216 |

Amounts shown above represent face amount of bonds outstanding and differ from the amounts shown on the accompanying *Balance sheet* due to treatment of original issue discount in the accompanying financial statements as a reduction of the principal amount due.

The legislative act under which the Authority was established provides that, if at any time any principal or interest is due on any bond or note issued or assumed by the Authority and funds to pay the same are not available, the Commonwealth shall thereupon remit to the Authority the amount required to meet such obligations.

Massachusetts Bay Transportation Authority
Notes to financial statements/continued

December 31, 1985 and 1984

Tabular amounts in thousands of dollars

Note 6:
**Plant and equipment
improvement
program**

The Authority's continuing program for mass transportation development has projects in service and in various stages of approval, planning and implementation with a total estimated cost of \$4.85 billion. As of December 31, 1985, projects with an estimated cost of \$3.73 billion have been approved with \$2.60 billion to be provided from federal grants, \$161 million from state and local sources, and \$967 million from Authority bonds. As of December 31, 1985, the Authority has expended \$2.9 billion on this program which has been financed through the receipt of \$2.05 billion of federal grants, \$739 million of the Authority's General Transportation System Bonds and \$108 million from other state and local sources.

Funding for an estimated \$1.12 billion of projects pending approval at December 31, 1985 is expected to be provided as follows: \$342 million from federal and other sources and \$773 million from bond proceeds. Currently, the authorized debt ceiling for MBTA bonds is \$1.25 billion. Of this amount, only \$135 million may be reissued, and any bonds maturing or redeemed on or after January 1, 1988 may not be reissued.

Based on the December 31, 1985 project and funding estimates, the Authority will be required to seek an increase by the Commonwealth of their bonding limitations.

The terms of the federal grant contracts require the Authority utilize the equipment and facilities for the purpose specified in the grant agreement, maintain these items in operation for a specified time period, which normally approximates the useful life of the equipment, and comply with the equal employment opportunity and affirmative action programs required by the Urban Mass Transportation Act of 1964, as amended. Failure to comply with these terms may jeopardize future funding and require the Authority to refund a portion of these grants to the Federal Department of Transportation. In management's opinion, no events have occurred that would result in the termination of these grants or require the refund of a significant amount of funds received under these grants.

As of December 31, 1985, the Authority had outstanding commitments related to the improvement program amounting to approximately \$383 million.

Note 7:
Settlement funds

As part of the Authority's program for mass transportation improvement, the Authority entered into a grant contract with the Urban Mass Transportation Administration (UMTA) providing for the purchase of 175 light rail vehicles, spare components and various engineering support at an estimated project cost of \$68,305,000 of which \$48,084,000 was to be provided by an UMTA grant. In 1972, the Authority entered into a contract with a manufacturer for the purchase of these vehicles, components and related engineering support. The 135 vehicles delivered pursuant to this contract experienced a variety of operating and maintenance problems which led to a series of disputes between the manufacturer and the Authority. In 1979, an agreement was reached with the manufacturer which released the manufacturer from all liability related to the vehicles in return for modification parts and a cash settlement.

UMTA has concurred with the agreement, provided that the settlement and associated interest income will be used along with funds remaining from the original grant to provide 175 vehicles with equivalent capacity available for revenue service. Authority management intends to utilize the funds in accordance with the original purposes of the 1972 grant application.

At December 31, 1985, the amount shown as settlement funds in the accompanying financial statements reflects the settlement proceeds from the manufacturer plus interest realized on the proceeds since the date of the settlement, less expenditures made for eligible project costs. Interest earned on the settlement funds is recorded as a deferred credit in the period during which it is earned.

Note 8:
**Loans payable to
Federal Department
of Transportation**

In 1973, the Authority purchased 145 miles of right-of-way and related properties in eastern Massachusetts from the Penn Central Railroad. This purchase was financed with a \$19,500,000 (6.875% interest rate) loan from the Federal Department of Transportation.

In 1976, the Authority purchased certain assets of the B & M, including right-of-way, revenue equipment, track and related properties. The cost of \$39,500,000 was financed with a \$24,173,000 (8% interest rate) loan from the Federal Department of Transportation secured by the assets purchased, a \$12,262,000 Federal Department of Transportation grant and \$3,065,000 of local funds.

Of the property purchased, right-of-way and yards of \$13,574,000 are not presently in transit use by the Authority and are being held for future expansion.

On January 6, 1983, pursuant to the Surface Transportation Act of 1982, 80% of the outstanding principal and interest accrued on these loans was forgiven by the federal government. On September 4, 1984, the Federal Department of Transportation approved the Authority's application for a grant to forgive the remaining 20% of the outstanding principal and interest accrued on the loans. The entire forgiveness is contingent upon the Authority committing the total sum of \$16,042,409 to a program of projects for the rehabilitation of its commuter rail system over a period not to exceed two years following the date of approval of the grant application. The Authority intends to fulfill this requirement and has committed this level of funding to date. The amount of principal and interest forgiven as of December 31, 1984 has been reflected as a federal grant.

Note 9:
Retirement Plans

The Authority provides pension benefits to employees through two contributory defined-benefit retirement plans. The largest plan, the MBTA Retirement Plan, covers all employees except MBTA Police who are covered separately. As a result of an amendment effective July 1, 1985, and retroactive to April 1, 1985, the Authority contributes 14.69%, with the employees contributing 4.0%. As of the date of the financial statements, the majority of union employees had reached pension and wage settlements utilizing these rates. The amount of employee and Authority contributions to the plan is intended to fund normal cost, interest on the unfunded liability, cost of retirement benefit increases implemented in years subsequent to the years in which benefits were earned, and administrative expenses.

Annual pension expense for the plan is computed based on a projected benefit method using a compounded annual interest rate of 7% and a salary increase factor of 5½%. The cost of the plan to the Authority was approximately \$24,029,000 for calendar 1985 and \$20,122,000 for calendar 1984. The accumulated plan benefits and plan net assets, determined as of December 31, 1984 and 1983, are as follows:

| | 1984 | 1983 |
|---|------------------|------------------|
| Actuarial present value of accumulated plan benefits: | | |
| Vested | \$429,358 | \$410,322 |
| Nonvested | 7,753 | 4,512 |
| Total | \$437,111 | \$414,834 |
| Net assets available for benefits | \$424,712 | \$366,832 |

Employees of the MBTA Policeman Association are members of a separate contributory retirement fund. The plan requires members to contribute 5.5% with the Authority paying an amount equal to approximately 9.5% of total payroll of the members. The plan has 116 members at December 31, 1985 and the cost of the plan to the Authority for calendar years 1985 and 1984 was approximately \$320,000 and \$300,000, respectively. The plan has not been subject to an actuarial valuation.

The Authority has also entered into agreements with certain salaried employees to provide supplemental pension benefits after retirement. Employees must have at least 10 years of service and be eligible under the provisions of the contributory retirement plan to receive these benefits. At December 31, 1985, approximately 960 employees were either receiving supplemental benefits or will be eligible to receive them upon retirement. Expense under this plan is computed based upon an entry age actuarial cost method, 40-year amortization of unfunded actuarial liability, an annual interest rate assumption of 9% and a salary increase factor of 7% compounded annually. The Authority's practice under this plan is to provide a reserve for pension costs as the benefits accrue.

Supplemental benefits expense was \$1,448,000 for calendar 1985 and \$1,358,000 for calendar 1984. The accumulated plan benefits as of January 1, 1985 and 1984, the dates of the latest actuarial valuation, and plan reserve as of December 31, 1985 and 1984 are as follows:

| | 1985 | 1984 |
|---|-----------------|-----------------|
| Actuarial present value of accumulated plan benefits: | | |
| Vested | \$ 8,400 | \$ 8,182 |
| Nonvested | 2,600 | 2,528 |
| Total | \$11,000 | \$10,710 |
| Reserve available for benefits as of December 31 | \$ 2,681 | \$ 2,302 |

Additionally, the Authority is obligated to pay pension and medical and other benefits to retired employees not eligible for membership in the retirement plan. These benefits are expensed on a current (as paid) basis. The expense to provide these benefits was \$7,349,000 in 1985 and \$7,658,000 in 1984, and was recognized as an expense when paid.

Effective March, 1986, salaried employees not participating in the regular and supplemental pension plans have been required to participate in a deferred compensation savings plan with employees contributing 4.0% and the Authority 8.0% of their salary. Under this plan, the Authority's contribution vests 50% after three years, 75% after four years, and 100% after five years. This compares to a twenty-three year vesting period for the regular MBTA retirement plan.

During 1985, the Financial Accounting Standards Board issued new standards on employer's accounting for pensions. The Authority will be required to adopt the new expense and disclosure standards no later than 1987 and, in certain circumstances, to reflect a minimum pension liability in their financial statements no later than 1989. These new standards will be adopted prospectively, and thus the financial statements included herein will not be restated. The Authority has not decided when it will implement the new standards and has not yet determined the impact of these changes on its future operations.

Massachusetts Bay Transportation Authority
Notes to financial statements/continued

December 31, 1985 and 1984

Tabular amounts in thousands of dollars

Note 10:
Subsequent events

On April 15, 1986, the Authority issued \$141,760,000 of refunding bonds in order to advance refund \$67,530,000 of 1983 Series A General Transportation System Bonds and \$51,105,000 of 1983 Series A Refunding issue of the General Transportation System Bonds. The proceeds from the refunding (net of expenses) were deposited with a trustee who used the proceeds to purchase direct obligations of federal, state and local governments, thereby defeasing the Refunded Bonds. The government obligations will mature at such time and yield interest in such amounts so that sufficient monies will be available therefrom to pay

principal and interest on the refunded debt as it matures. The refunding results in a reported book loss of approximately \$27,000,000 which will be recognized as of the date of the refunding and will be offset in future years through reduced service. The loss will not affect the *Net cost of service* because bond principal payments and related interest are assessed when paid by the Authority. Reduced debt service results as interest rate on the refunded bonds were at interest rates ranging from 8.75% to 9.75% while the new refunding issue has rates ranging from 4.25% to 7.25%.

**Report of
independent
certified public
accountants**

To the Board of Directors of
Massachusetts Bay Transportation Authority:

We have examined the balance sheet and statement of bonds payable of the Massachusetts Bay Transportation Authority (a political subdivision of the Commonwealth of Massachusetts) as of December 31, 1985 and 1984, and the related statements of revenue and cost of service, unreimbursed cost of service and changes in financial position for the years then ended. Our examinations were made in accordance with generally accepted auditing standards and, accordingly, included such tests of the accounting records and such other auditing procedures as we considered necessary in the circumstances.

In our opinion, the financial statements referred to above present fairly the financial position of the Massachusetts Bay Transportation Authority as of December 31, 1985 and 1984, and the result of its operations and the changes in its financial position for the years then ended, in conformity with generally accepted accounting principles applied on a consistent basis.

Arthur Andersen & Co.

May 9, 1986.

Letter of transmittal

To His Excellency the Governor, The General Court,
The Secretary of Transportation and the Advisory Board
to the Massachusetts Bay Transportation Authority:

The Board of Directors of the Massachusetts Bay Transportation Authority, in accordance with the requirements of Section 5(h) of Chapter 161A of the General Laws, hereby submits the Authority's Annual Report covering operations for the calendar year 1985. Included in the report is a description of the organization, recommendations for legislation and the comprehensive program for mass transportation prepared by the Executive Office of Transportation and Construction.

The net assessable cost of service, interest charged by the State Treasurer and Boston Metropolitan District expense must be considered by the 78 cities and towns in their settlement with the Commonwealth of their 1985 accounts in November, 1986. The accounts are as follows:

| | Without additional state aid | With additional aid of \$147,392,419.22 |
|---|------------------------------------|---|
| Net assessable cost of service | \$243,150,544.31 | \$ 95,758,125.09 |
| Interest charged by State Treasurer on temporary borrowings | 9,104,099.52 | 9,104,099.52 |
| Expense of Boston Metropolitan District | 25,000.00 | 25,000.00 |
| Net cost to communities | \$252,279,643.83 | \$104,887,224.61 |

Chapter 206, Acts of 1986, the state budget for fiscal year 1987 beginning July 1, 1986, provided additional contract assistance in the amount of \$147.4 million to allow cities and towns to be capped at an assessment of \$104.9 million.

The following statement shows the Authority's comparative net cost of service including all elements of cost for calendar years 1985 and 1984.

The balance sheet and statement of long-term debt of the Massachusetts Bay Transportation Authority as of December 31, 1985, and the related statements of revenue and cost of service, reimbursed cost of service, and source of disposition of funds for the calendar year ended December 31, 1985, together with notes relating to these financial statements, are appended to this report.

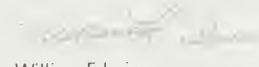
Respectfully submitted,

Board of Directors
Massachusetts Bay Transportation Authority

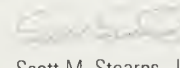

Frederick P. Salvucci
Chairman

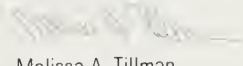

Judith H. Robbins

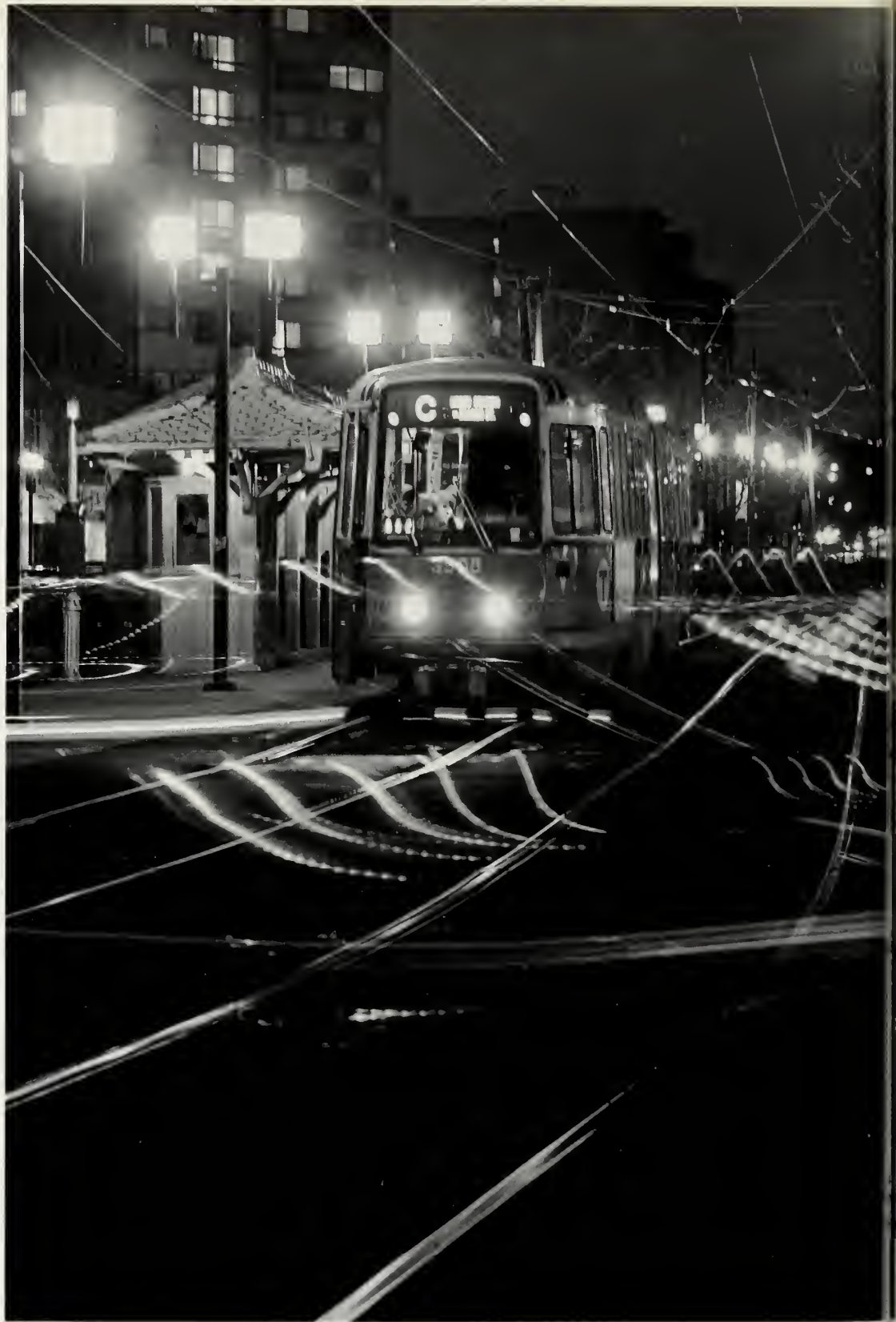

Melba F. Hamilton


William F. Irvin


James E. Smith


Scott M. Stearns, Jr.


Melissa A. Tillman



Track work began on the Green Line from Boylston Street to North Station. The track overhaul program requires removal and replacement of track, trackbed, ties, switches and related equipment. Future track work will overhaul the line between Boylston Station and the portals at Kenmore, St. Mary's Street, Fenway, and Huntington Avenue.

Massachusetts Bay Transportation Authority
Comparison of net cost of service

Calendar years 1985 and 1984

| | 1985 | 1984 | Increase or (decrease) |
|---|-------------------------|-------------------------|---------------------------|
| Income | | | |
| Revenue from transportation | \$104,507,978.56 | \$101,021,207.63 | \$ 3,486,770.93 |
| Revenue from other railway operations | 5,248,073.90 | 4,409,950.05 | 838,123.85 |
| Non-operating income | 8,759,629.76 | 5,482,438.03 | 3,277,191.73 |
| Gas and diesel tax reimbursement | 461,450.00 | 464,069.00 | (2,619.00) |
| Reimbursement from outside district | 790,432.00 | 495,155.00 | 295,277.00 |
| Total income | 119,767,564.22 | 111,872,819.71 | 7,894,744.51 |
| Operating wages and fringe benefits | | | |
| Wages | 175,174,168.66 | 162,173,956.72 | 13,000,211.94 |
| General and administrative cost capitalized, credit | (1,305,708.87) | (1,380,520.04) | 74,811.17 |
| MBTA pensions | 26,632,744.56 | 22,543,007.96 | 4,089,736.60 |
| Social Security taxes | 13,740,267.39 | 12,682,625.17 | 1,057,642.22 |
| Workers' compensation | 5,829,397.56 | 5,069,550.64 | 759,846.92 |
| Accident and sickness insurance | 497,229.07 | 450,733.09 | 46,495.98 |
| Group life insurance | 535,762.95 | 598,632.28 | (62,869.33) |
| Health care insurance | 23,851,261.98 | 22,818,755.13 | 1,032,506.85 |
| Unemployment insurance | 105,800.00 | 88,100.00 | 17,700.00 |
| Uniform and work clothes | 729,952.13 | 507,404.39 | 222,547.74 |
| Fringe benefits cost capitalized, credit | (8,034,757.70) | (8,052,377.37) | 17,619.67 |
| Total operating wages and fringe benefits | 237,756,117.73 | 217,499,867.97 | 20,256,249.76 |
| Other expenses and taxes | | | |
| Material and other items | 46,714,676.85 | 39,488,226.21 | 7,226,450.64 |
| Injuries and damages | 5,323,421.31 | 7,557,144.30 | (2,233,722.99) |
| Interest on unfunded debt | 15,128,539.43 | 12,602,351.81 | 2,526,187.62 |
| Fuel | 21,042,365.89 | 23,816,990.03 | (2,774,624.14) |
| Taxes (other than included above) | 1,035,187.08 | 1,007,199.27 | 27,987.81 |
| Railroad commuter subsidy | 50,803,911.43 | 49,152,600.29 | 1,651,311.14 |
| Local service subsidies | 3,150,273.80 | 2,407,314.14 | 742,959.66 |
| Total operating expenses and taxes | 380,954,493.52 | 353,531,694.02 | 27,422,799.50 |
| Fixed charges | | | |
| Interest on funded debt (MTA) | 4,736,862.52 | 4,796,192.00 | (59,329.48) |
| Interest on funded debt (MBTA) | 45,400,461.54 | 38,726,072.99 | 6,674,388.55 |
| Payment on funded debt (MTA) | 2,875,312.40 | 2,882,925.93 | (7,613.53) |
| Payment on funded debt (MBTA) | 20,067,356.48 | 18,865,000.00 | 1,202,356.48 |
| Miscellaneous debits (MTA) | 91,199.06 | 112,634.45 | (21,435.39) |
| Bank service charges (MBTA) | 404,940.04 | 145,792.55 | 259,147.49 |
| Total fixed charges | 73,576,132.04 | 65,528,617.92 | 8,047,514.12 |
| Total current expenses | 454,530,625.56 | 419,060,311.94 | 35,470,313.62 |
| Cost of service in excess of income | 334,763,061.34 | 307,187,492.23 | 27,575,569.11 |
| Assistance: State and Federal assistance | | | |
| Chap. 161A of G.L. (Sec. 28)—MTA | 3,000,000.00 | 3,000,000.00 | — |
| Chap. 161A of G.L. (Sec. 28)—MBTA | 58,994,100.03 | 50,695,001.62 | 8,299,098.41 |
| Chap. 289, Acts of 1983—MBTA (RR) | — | 3,946,236.00 | (3,946,236.00) |
| Chap. 234, Acts of 1984—MBTA (RR) | 5,055,758.00 | 3,734,400.00 | 1,321,358.00 |
| Chap. 140, Acts of 1985—MBTA (RR) | 4,142,000.00 | — | 4,142,000.00 |
| Chap. 140, Acts of 1985—MBTA | — | 125,543,540.20 | (125,543,540.20) |
| Chap. 206, Acts of 1986—MBTA | 147,392,419.22 | — | 147,392,419.22 |
| Federal Operating Assistance—Sec. 5 and 9 | 20,420,659.00 | 26,498,651.00 | (6,077,992.00) |
| Total assistance | 239,004,936.25 | 213,417,828.82 | 25,587,107.43 |
| Net assessable cost of service, loss | \$ 95,758,125.09 | \$ 93,769,663.41 | \$ 1,988,461.68 |

Note: Cities and towns capped at \$104.9M in 1985 and \$102.3M in 1984.

MBTA assessment procedures

A question frequently heard from our customers is "how is my town's MBTA assessment determined?" All 78 cities and towns in the MBTA district pay a share of the MBTA's yearly deficit or net cost of service. The assessment formulas for sharing the deficit were originally spelled out in state legislation passed in 1964 when the old MTA district, serving 14 cities and towns, was enlarged to the present regional transportation district and renamed the MBTA. The formulas have been amended by the legislature from time to time in an effort to make the assessment more fair and equitable.

The legislation defines two basic types of MBTA service, "express service" and "local service." Express service refers to rapid transit service on controlled rights-of-way, while local service refers to MBTA buses, trackless trolleys and streetcars in local streets. The net cost of providing each of these types of service is calculated separately and allocated by a different formula.

Express service Legislation has divided the assessment for the cost of express service into two parts, a 75% portion, and a 25% portion, each distributed in a different fashion.

The 75% portion of the net cost of express service is shared by all 78 cities and towns in the MBTA, based on the number of "commuters" living in each municipality. The number of commuters in each city and town was determined from the 1980 Federal Census data and included all people who traveled outside their town to their place of work, whether they used public transportation or not. In the case of the City of Boston, the number of commuters was established so that Boston would be responsible for not less than 30% of this 75% portion.

The remaining 25% of the net cost of express service is shared only by those cities and towns that have one or more express service stations. This part of the assessment is proportional to the number of passengers boarding the rapid transit and railroad lines at stations in each community. By law, counts are taken to determine the number of passengers boarding at each station and within each town, no less frequently than every two years. However, in 1973, the legislature amended the assessment procedure to exclude from the boarding counts passengers boarding at new rapid transit stations opened after July, 1973. This amendment means that a new station in a community will not result in an increase in its assessment for the 25% portion of express service costs.

Local service Local service refers to buses, trackless trolleys, and streetcars operating on local streets. As in express service, the formula for assigning the local service deficit is divided into two parts, each of 50% portions. Half of the local service deficits is allocated on the basis of population as determined by the most recent Federal Census (1980); on the weight of 14 cities and towns and 64 cities and towns independent. The other 50% is shared by those cities and towns that have such service and is based on the proportion of losses incurred in each city or town.

To determine the operating loss incurred in each community costs are first identified with a mode of service—bus, trolley and streetcar. All direct costs are identified directly with the appropriate mode, and indirect costs are allocated to modes largely based upon the direct charges to each mode each year. Costs by mode are then allocated to specific routes by means of one of six bases depending upon the type of expenses involved. Direct costs of operations and maintenance of each rating station (depot) are allocated only to routes emanating from that rating station. For example, costs of operating and maintaining routes from the Quincy Garage are allocated only to the routes in the Quincy Rating Station.

Farebox revenue is sampled on each route four times yearly and the difference between operating cost and annual revenue determines the yearly profit or loss for each route. This profit or loss is allocated to each city or town on the route. If a town elects to have no local service, buses then make no stops in that town, and the profit or loss from routes passing through that town is distributed among the other towns on the route. For all cities or towns with local MBTA service, the losses or profits from the routes in the community are totalled. Half of the MBTA's local service assessment is then based on the percentage of local service operating losses incurred in each municipality.

As an example of total service assessment, consider a six-mile bus route, with four miles in Town A and two miles in Town B. Assume that the operating cost from the route was \$100,000 a year. Assume also that farebox revenue on the route was \$40,000 a year. The operating deficit would be \$60,000 a year—the difference between operating cost and revenue. Half of the \$60,000 deficit (\$30,000) would be allocated among the 14 cities and towns and the 64 cities and towns on the basis of population, and half would be allocated to Towns A and B. Town A would have to pay \$20,000 and Town B would be assessed \$10,000 because the bus route operated twice as many miles in Town A as in Town B.

Objectives The MBTA assessment procedures can be summed up by pointing out two objectives in the formulas. The first objective is to recognize that the cities and towns of the MBTA district comprise one regional transportation district, that all municipalities benefit by the system, and therefore, all must share some of the deficit. The second objective is to assess properly that portion of the assessment to those cities and

towns that are receiving a greater degree of service. To relieve the burden on local government, the state began, in 1973, to pay for part of the MBTA deficit. This state portion has increased because of the passage of Proposition 2½. The federal government is also providing operating subsidies for mass transit under legislation enacted in 1974, as amended.

| Type of service | Portion of deficit | Who pays | Basis of assessment |
|-----------------|--------------------|---|---|
| Express | 75% | All cities and towns | Number of commuters (1980 U.S. Census) |
| | 25% | Cities and towns with rapid transit and commuter rail | Boarding rounds (Except stations built after July 1973) |
| Local | 50% | 14 cities and towns | Population |
| | | 64 cities and towns | (1980 U.S. census) |
| | 50% | Cities and towns with local service | Share of losses sustained locally |

Legislation

On the legislative front, the MBTA again pressed for a tort liability cap. Although Senate Bill 1616 did not pass in the 1985 Session of the General Court, the Bill did receive favorable responses from the House Transportation Committee and the Senate Ways and Means Committee. In seeking a liability cap of \$100,000, the legislation would allow the MBTA to be included under M.G.L. c. 258 which limits the liability for the Commonwealth, cities and towns to approximately \$100,000. The Law Department will again redouble its efforts to pass such legislation in the 1986 Session. Our concerns, which generally emanate from excessive verdicts over the 1984 calendar year (\$9.9 million in injuries and damages), are consistent with the never ending trend toward increased tort matters and strict liability.

Our legislative efforts, however, were successful on numerous occasions, as is reflected by the passage or enactment of the following 1985 legislation:

Chapter 722 An Act Authorizing the Disposing of or Selling Certain Power Plants and Substations of the Massachusetts Bay Transportation Authority

Chapter 783 An Act Relative to the Terms of Certain Notes to be Issued by the Commonwealth. *In explanation of the above, G.L., C. 161A, s. 12 (as amended by St. 1965, C. 650, s. 1), authorizes the state treasurer to issue notes of the Commonwealth to pay MBTA deficits, pursuant to section 12, and estimated deficits under section 13, and to make payments (if necessary) of guaranteed bond anticipation notes under section 13. These payments in turn are assessed upon the member cities and towns and the assessments are due on November 20 of the following year in which the deficit arises.*

Chapter 784 An Act Relative to the Use of Certain Land in the City of Cambridge by the Massachusetts Bay Transportation Authority. *This legislation would relieve the Authority of rental payments for a certain parcel of land in Harvard Square, Cambridge, known as parcel 1B, now owned by the Commonwealth.*

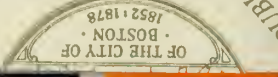
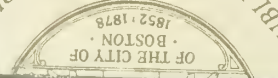
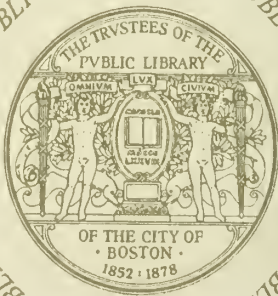
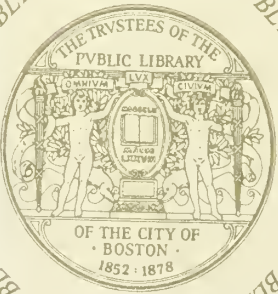
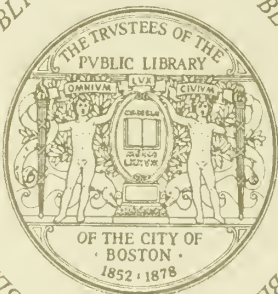
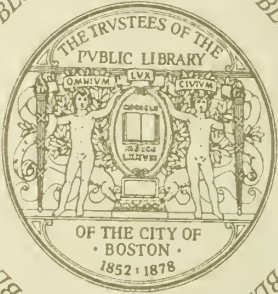
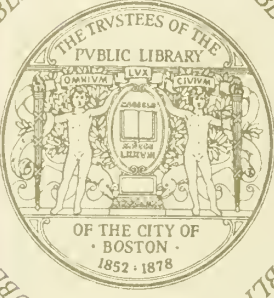
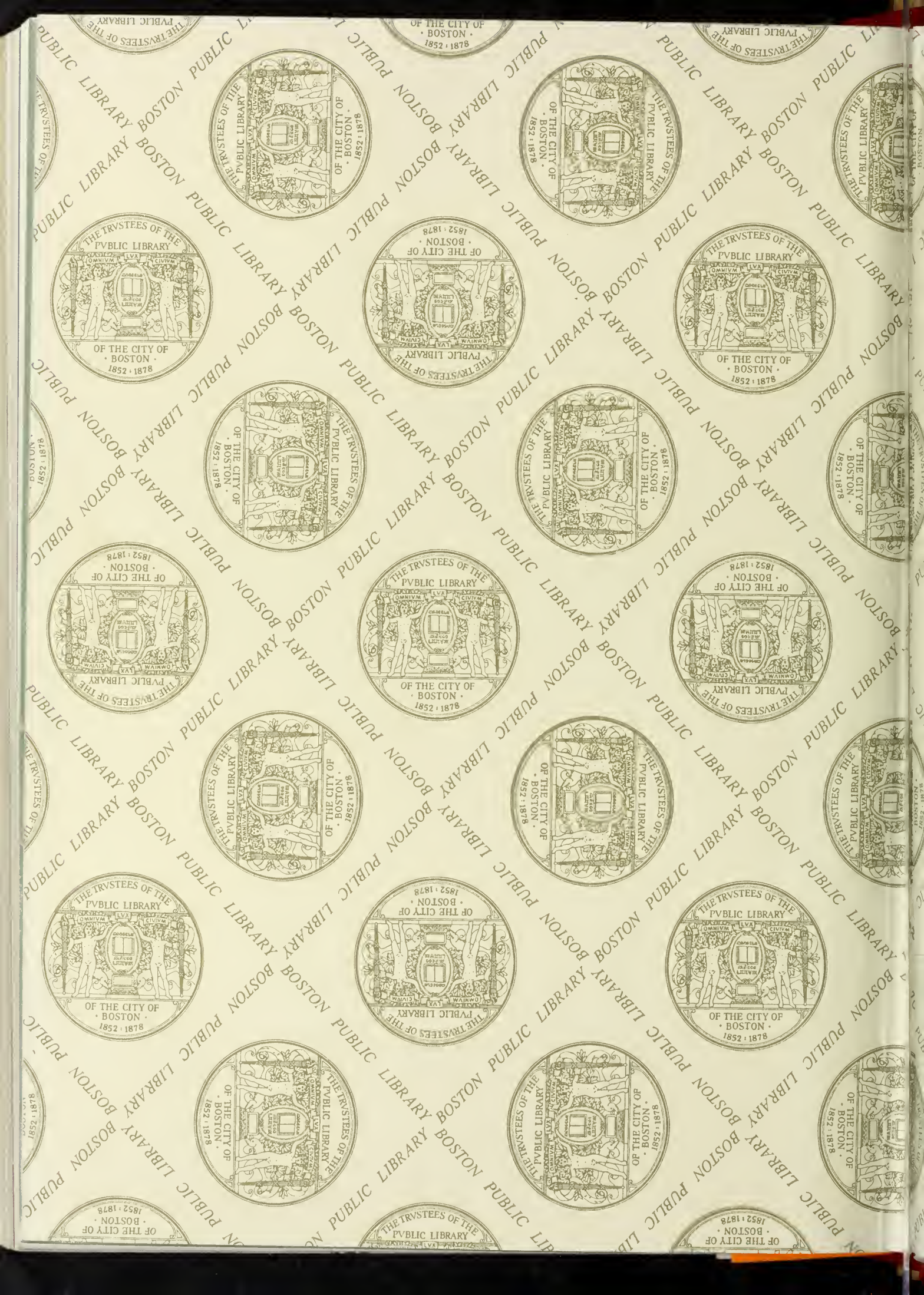
Chapter 811 An Act Providing for an Accelerated Transportation Development and Improvement Program for the Commonwealth.

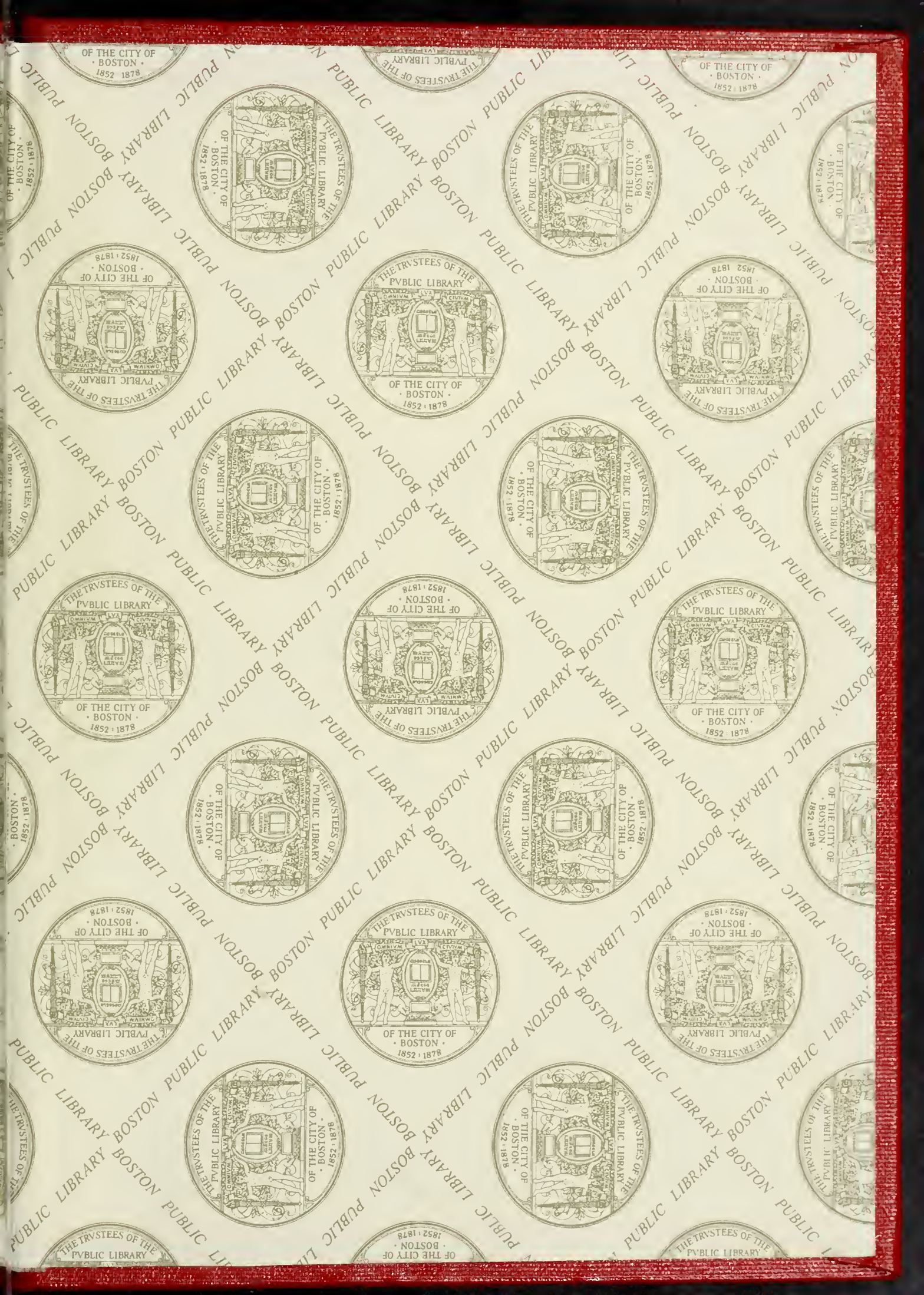
Transportation Bond Issue.

MBTA Sections in Bond Issue: Section 34A amends subsection (b) and (c) of Section 5 of Chapter 161A.

Although all of the above legislation will have a significant impact upon the Authority and the Commonwealth, the enactment of Section 34A is especially encouraging as it relates the development of properties sold by the Authority. Section 34A, in amending our enabling statute (G.L. c. 161A), will provide the Authority with the capability of selling real property subject to restrictions established by the Authority. The passage of such legislation will also enhance our ability to transfer property along the Southwest Corridor and more important will channel the development of the Corridor in a manner consistent with community needs. In addition, Section 34A further amends our statute by allowing the Authority to enter into development agreements. Such agreements will again increase our interaction with the surrounding community and will allow the Authority limited participation in the actual development of the Southwest Corridor Project.



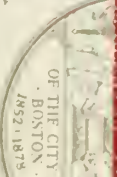




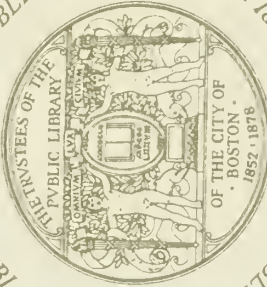
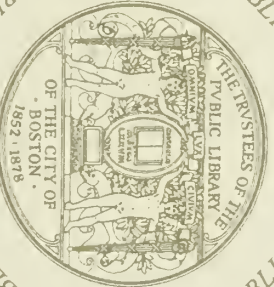
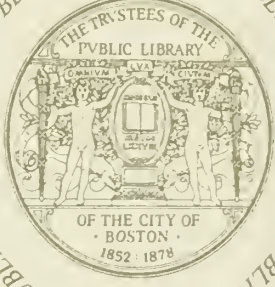
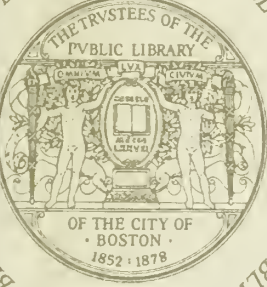
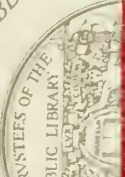
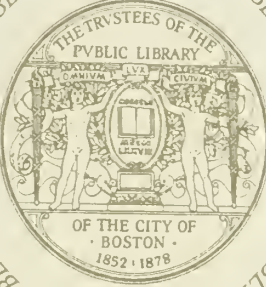
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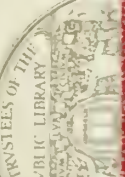
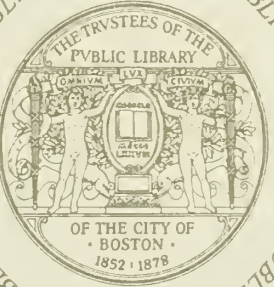
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